Air Conditioners

Technical Data

VRV® Air-cooled Selection Procedure



EEDEN12-200

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VRV® Air-cooled Selection Procedure



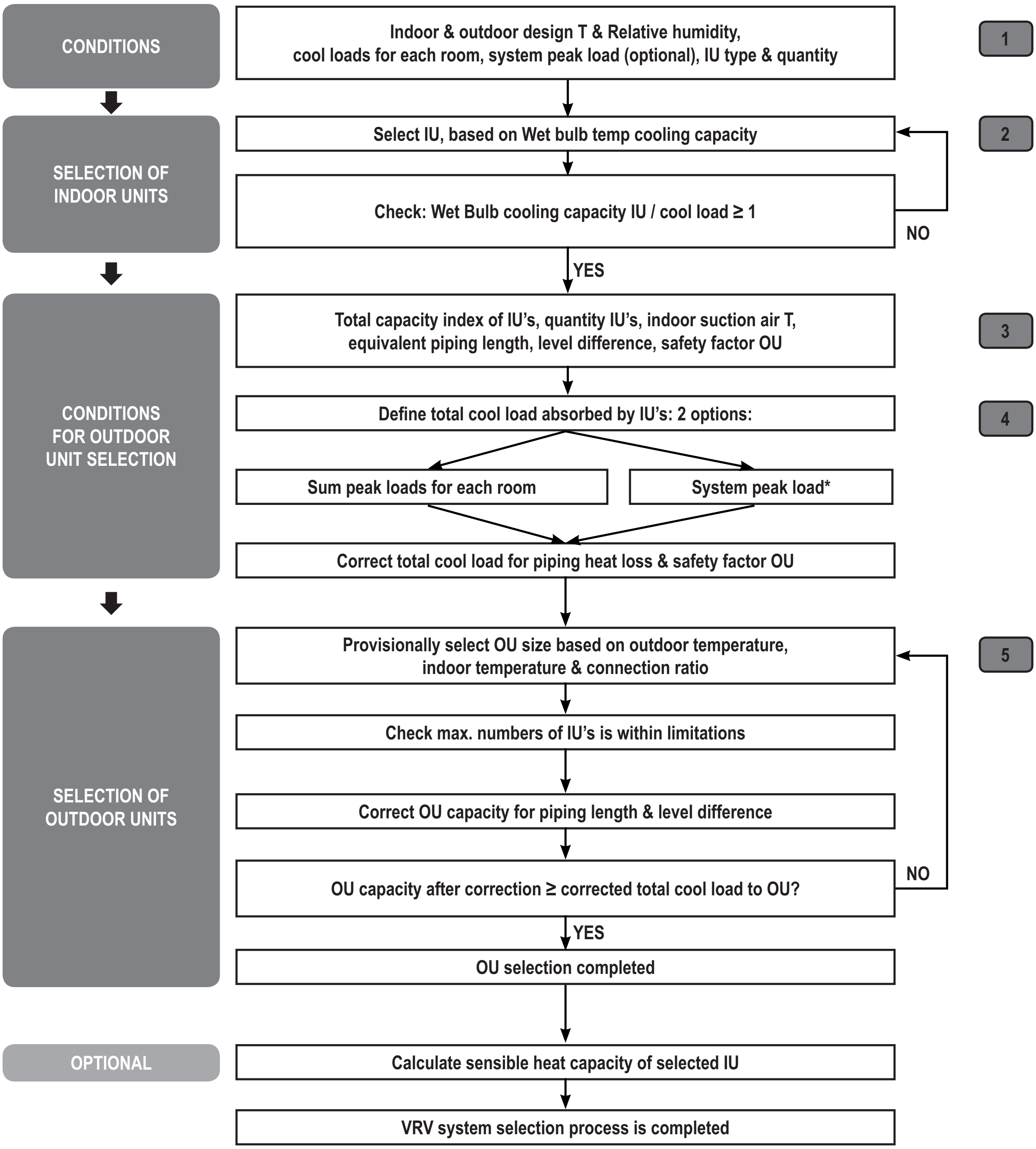
EEDEN12-200

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1 Selection procedure VRV® system based on cooling load

1 - 1 Flowchart



* System peak load = maximum load which has to be convered at the same time by all indoor units which are connected to the same outdoor unit

1 Selection procedure VRV® system based on cooling load

1 - 2 Step by step

1 - 2 - 1 Design conditions:

To start designing a VRV® system in cooling mode, following information is needed:

- Indoor conditions: Wet bulb temperature (°CWB) & Dry bulb temperature (°CDB)
- Cooling loads per room: total cool load, sensible cool load (optional)
- Outdoor conditions: Dry bulb temperature (°CDB)
- System peak load: the maximum total cool load that occurs at a certain moment of the day that has to be handled by all indoor units connected to a same outdoor unit system

  System peak load ≠ sum of peak loads

  Sum of peak loads = the sum of all individual peak loads of every indoor unit/room at its own peak of the day. Depending on the sun positioning and the orientation of the room. A room oriented to the east probably has its peak load in the morning, while a room oriented at the west has its peak load in the afternoon.

1 - 2 - 2 Selection of indoor unit

Select indoor unit based on total cool load at design indoor wet bulb temperature(°CWB) & nominal outdoor dry bulb temperature (35°CDB)

➔ See cooling capacity table of selected type of indoor unit

1 - 2 - 3 Check cool load

Check if the cooling capacity of the indoor unit is bigger than the cool load.

1 - 2 - 4 Conditions for outdoor unit selection:

Following data is needed to select correct outdoor unit system:

- Total capacity index of indoor units (= sum of capacity indexes of all indoor units)
- Total number of connected indoor units
- Indoor suction air temperature (°CWB/°CDB) & design outdoor temperature (°CDB)
- Equivalent piping length between furthest indoor unit and outdoor unit
- Level difference between indoor units & outdoor unit

1 Selection procedure VRV® system based on cooling load

1 - 2 Step by step

1 - 2 - 5 Define cooling capacity to be given by outdoor unit system:

Step 1: Define Total cooling load to be absorbed by connected indoor units: two options:

- Sum of peak loads for each room
- System peak load

Step 2: Correct total cool load indoor units by piping heat loss factor & (optional) safety factor outdoor unit

Cooling capacity to be given by outdoor unit system =
total cooling load x (1 + (heat loss factor x actual pipe run))

Heat loss factor is function of design outdoor temperature (see below table)

Design outdoor temperature (°CDB)	Piping heat loss factor (%/m)
< 10	0%
15	0.004%
20	0.009%
25	0.014%
30	0.022%
35	0.030%
40	0.038%

NOTE

1 The table for the cooling and heating correction factors consist of limitation temperatures. If the ambient temperatures are outside the range in the table, the closest temperature needs to be considered.

1 - 2 - 6 Selection of outdoor unit

- Provisionally select outdoor unit size & type based on outdoor temperature (°CDB), indoor temperature (°CWB) & connection ratio
  - ➔ See cooling capacity table of selected outdoor unit in ED
- Check if maximum number of indoor units and connection ratio is within limitations
- Correct the outdoor unit capacity by piping correction factor (α) based on pipe run and level difference between indoor unit and outdoor unit
  - ➔ See piping correction diagrams in ED
- Check if available cooling capacity after piping correction is still bigger than the cooling capacity to be given by the outdoor unit (see chapter 5.)
- Outdoor unit size is selected.

NOTE

1 In the VRV selection software, the heat loss correction factor is applied to the outdoor unit and not to the requested capacity. This is because the requested capacity is known by the user and is needed to be filled in. It would be strange to see another figures being used in the calculations than the one put in in the system.

1 - 2 - 7 Sensible heat capacity

Sensible capacity is the capacity required to lower the temperature and latent capacity is the capacity to remove the moisture from the air. The sensible heat can influence selection in case of really humid area's (gym), or dry room (computer rooms).

When sensible capacity is larger than normal, bigger IU need to be selected to be able to reach the full required capacity.

1 Selection procedure VRV® system based on cooling load

1 - 3 Example

1 - 3 - 1 Design conditions

- Determine indoor / outdoor design temperature

  Indoor: 20° CWB / 28° CDB

  Ambient: 33° CDB

- Determine room peak loads (and if possible, system peak loads = optional)

Design loads in kW (total cooling capacity)

Time	A	B	C	D	E	F	G	H	Sum
9h00	*2.9*	2	1.5	3.3	3	*4*	3	1.7	21.4 kW
13h00	2	*2.7*	1	3.3	*4*	3.4	*3.9*	1.9	22.2 kW
17h00	1.9	1.8	*2.5*	*4.3*	3.3	3	2.3	*2.9*	22 kW

Sum Room Peak loads 27.2 kW

System Peak Load 22.2 kW Max capacity requested from outdoor unit

1 - 3 - 2 Selection of indoor unit

FXCQ indoor unit

	A	B	C	D	E	F	G	H	Sum
FXCQ	**25**	**25**	**25**	**40**	**40**	**40**	**40**	**25**	**260**
kW	**3.0**	**3.0**	**3.0**	**4.8**	**4.8**	**4.8**	**4.8**	**3.0**	**31.2**

* the capacity is selected according to the design conditions (indoor 20° CWB / 28° CDB; ambient 35° CDB)

NOTE

1 The new selection method, for the indoor unit selection, does not take into account the outdoor temperature. Therefore take the rated outdoor temperatures when looking up in the indoor unit capacity table (35° CDB for cooling, 7° CDB for heating)

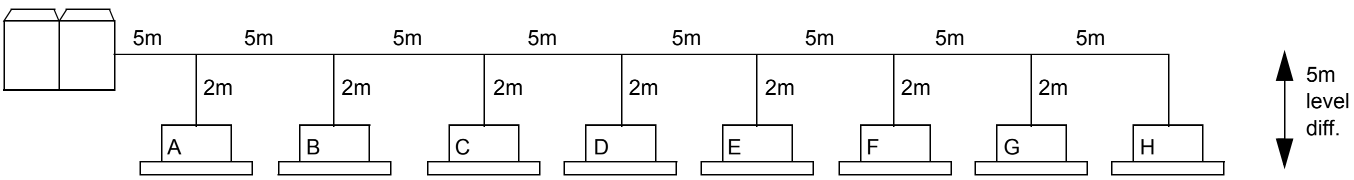
1 - 3 - 3 Check cool load

Total cooling capacity of indoors > cool load

31.2>22.2 kW

1 - 3 - 4 Conditions for outdoor unit selection:

- Total capacity index of indoor units = 260 OK
- Number of Selected indoors = 8 OK
- Equivalent piping length and level difference



Equivalent pipe length (*) = 43.5 meter

(*) Length to furthest indoor unit including equiv. Pipe length of refnets (0.5 meter per refnet)

1 Selection procedure VRV® system based on cooling load

1 - 3 Example

1 - 3 - 5 Define cooling capacity to be given by outdoor unit system:

Total cooling load

- Sum of peak loads = 27.2 kW
- System peak load = 22.2 kW

Correct total cool load

Table: Coefficient of loss per meter of piping with insulation thickness of 10mm

Correction factor	HLC (%/m)	HLH (%/m)
Ambient temperature	Cooling	Heating
-15		0.100
-10		0.093
-5		0.086
0		0.078
5	0.000	0.071
10	0.000	0.064
15	0.004	0.057
20	0.009	0.049
25	0.014	
30	0.022	
35	0.030	
40	0.038	

For 33° CDB ambient temperature, the heat loss factor is 0.0268% (interpolated).

For the piping length, the first 7.5m is not considered

⇨ 43.5m - 7.5m = 36m

Heat loss factor * actual piping run

⇨ 0.0268% * 36m = 0.009648

total cooling load x (1 + (heat loss factor x actual pipe run))

⇨ 22.2*(1 + 0.009648) = 22.4

1 Selection procedure VRV® system based on cooling load

1 - 3 Example

1 - 3 - 6 Selection of outdoor unit

- select outdoor unit type
  RXYQ8P outdoor unit

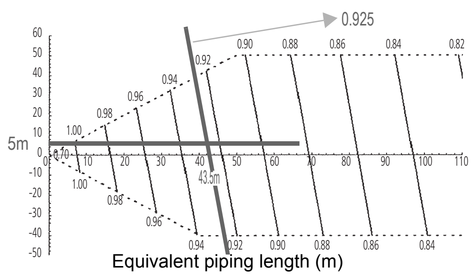
Indoor unit combination total capacity index table

Outdoor unit	Indoor unit combination ratio								
	130 %	120 %	110 %	100 %	90 %	80 %	70%	60 %	50 %
4HP	130	120	110	100	90	80	70	60	50
5HP	162.5	150	137.5	125	112.5	100	87.5	75	62.5
6HP	182	168	154	140	126	112	98	84	70
8HP	260	240	220	200	180	160	140	120	100
10HP	325	300	275	250	225	200	175	150	125
12HP	390	360	330	300	270	240	210	180	150
14HP	455	420	385	350	315	280	245	210	175
16HP	520	480	440	400	360	320	280	240	200
18HP	585	540	495	450	405	360	315	270	225
20HP	650	600	550	500	450	400	350	300	250
22HP	715	660	605	550	495	440	385	330	275
24HP	780	720	660	600	540	480	420	360	300
26HP	845	780	715	650	585	520	455	390	325
28HP	910	840	770	700	630	560	490	420	350
30HP	975	900	825	750	675	600	525	450	375
32HP	1,040	960	880	800	720	640	560	480	400
34HP	1,105	1,020	935	850	765	680	595	510	425
36HP	1,170	1,080	990	900	810	720	630	540	450
38HP	1,235	1,140	1,045	950	855	760	665	570	475
40HP	1,300	1,200	1,100	1,000	900	800	700	600	500
42HP	1,365	1,260	1,155	1,050	945	840	735	630	525
44HP	1,430	1,320	1,210	1,100	990	880	770	660	550
46HP	1,495	1,380	1,265	1,150	1,035	920	805	690	575
48HP	1,560	1,440	1,320	1,200	1,080	960	840	720	600
50HP	1,625	1,500	1,375	1,250	1,125	1,000	875	750	625
52HP	1,690	1,560	1,430	1,300	1,170	1,040	910	780	650
54HP	1,755	1,620	1,485	1,350	1,215	1,080	945	810	675

- Determine max. allowed connection ratio
  Max. 130% connection ratio

At 33°CDB ambient, 20° CWB/28° CDB indoor, the cooling capacity outdoor = 24.4 kW (cfr. Capacity table in databook)
In the capacity the outdoor unit can deliver following losses have to be incorporated:

1 pipe length / level difference correction factor for given equiv. Pipe length (43.5m) and level difference (5 m) = 0.925

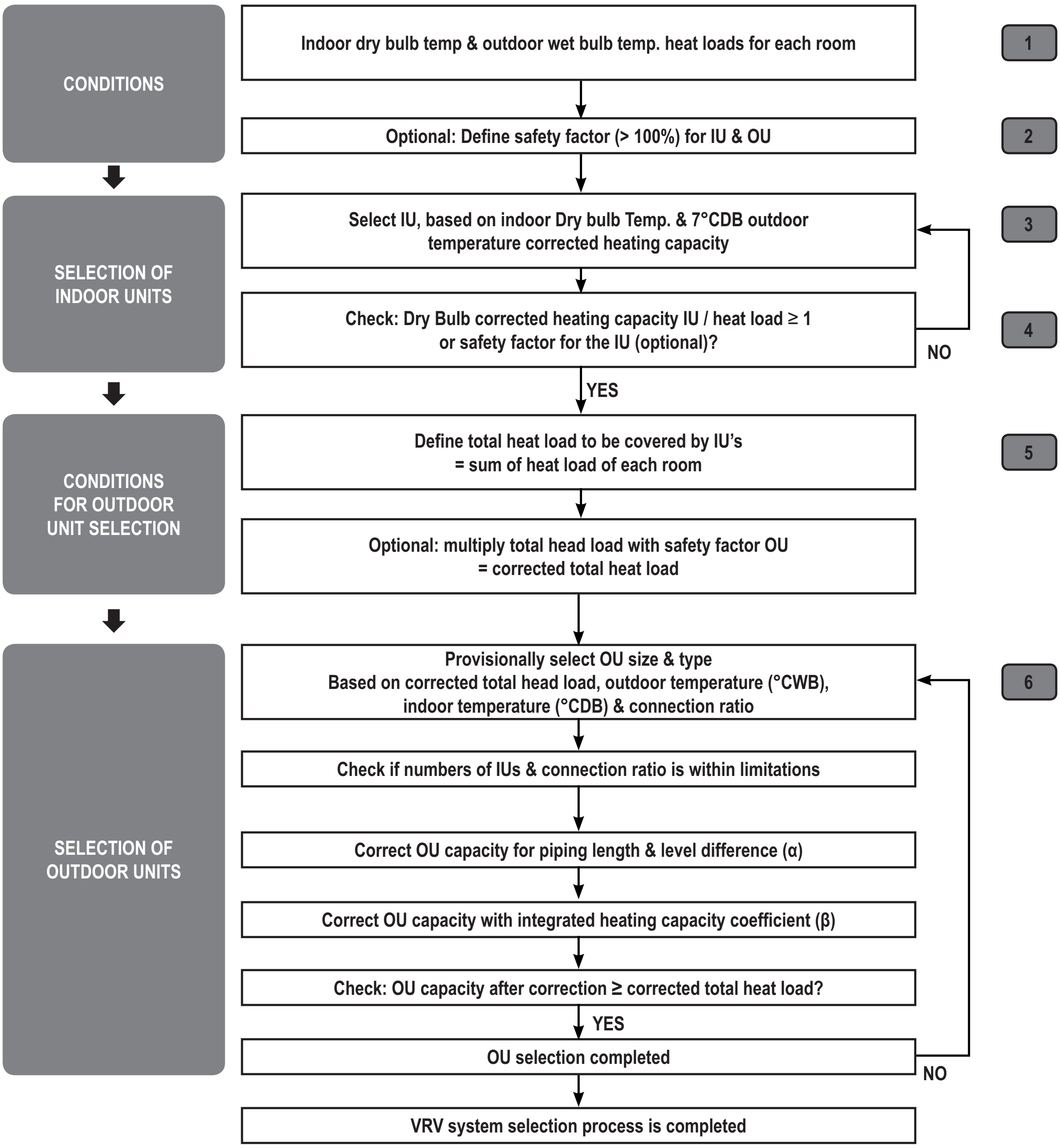


2 losses due to defrost = not applicable (since cooling mode)
=> 24.4 kW * 0.925 = 22.57 kW

The outdoor unit gives 22.57 kW whereas the required capacity is 22.4 kW

2 Selection in heating mode

2 - 1 Flowchart



2 Selection in heating mode

2 - 2 Step by step

2 - 2 - 1 Design conditions:

To start designing a VRV system in heating mode, following information is needed:

- Indoor conditions: Dry bulb temperature (°CDB)
- Heat loads per room: total heat load
- Outdoor conditions: Wet bulb temperature (°CWB) & Dry bulb temperature (°CDB)

2 - 2 - 2 Safety factor:

Optionally it is possible to increase the calculated heat loads by a certain factor (>1) to have extra safety when selecting indoor unit size & outdoor unit size

2 - 2 - 3 Selection of indoor unit

Select indoor unit based on total heat load at design indoor dry bulb temperature(°CDB) & nominal outdoor temperature (6°CWB / 7°CDB)

➔ See heating capacity table of selected type of indoor unit

2 - 2 - 4 Check heat load

If a safety factor has been applied to the heat load, please check if the heating capacity of the indoor unit is bigger than the corrected heat load.

2 - 2 - 5 Conditions for outdoor unit selection:

Following data is needed to select correct outdoor unit system:

- Total capacity index of indoor units (= sum of capacity indexes of all indoor units)
- Total number of connected indoor units
- Indoor suction air temperature (°CDB) & design outdoor temperature (°CWB)
- Equivalent piping length between furthest indoor unit and outdoor unit
- Level difference between indoor units & outdoor unit
- Safety factor for outdoor unit (optional)

2 - 2 - 6 Define heating capacity to be given by outdoor unit system:

The total heating capacity to be given by outdoor unit system is defined by the sum of all heating loads to be absorbed by the indoor units connected to the to be selected outdoor unit

2 Selection in heating mode

2 - 2 Step by step

2 - 2 - 7 Selection of outdoor unit

- Provisionally select outdoor unit size & type based on outdoor temperature (°CDB), indoor temperature (°CDB) & connection ratio
  - ➔ See heating capacity table of selected outdoor unit in ED
- Check if maximum number of indoor units and connection ratio is within limitations
- Correct the outdoor unit capacity by piping correction factor (α) based on pipe run and level difference between indoor unit and outdoor unit
  - ➔ See piping correction diagrams in ED
- Correct the outdoor unit capacity by integrated heating capacity coefficient (β) influence of the defrost operation on the integrated heating capacity)
- ➔ See integrated heating capacity table in ED
- Check if available heating capacity after piping & defrost correction is still bigger than the heating capacity to be given by the outdoor unit
- Outdoor unit size is selected.

2
2

REMARK

Calculation of HT Hydrobox:

- Available heating capacity HXHD125 = 14 kW
  - ➔ this remains always available irrespective of outdoor temperature or leaving water temperature (LWT)
- Capacity index HXHD125 = 125
  - ➔ to be used for definition of total capacity index & connection ratio of REYAQ
- Power input HXHD125 depends on Leaving Water Temperature (LWT) (see table 1)
- Requested heating capacity from REYAQ depends on Leaving Water (LWT) (see table 1)

Table 1:

Leaving Water Temperature [°C]	35	45	55	65	75
Requested heating capacity from REYAQ [kW]	12.98	12.60	12.60	12.10	11.09
Power input HXHD125 [kW]	1.50	1.79	1.83	2.33	3.25

In case less than 14 kW capacity is needed to produce hot water:

When less than 14 kW heating capacity is required from the hydrobox, the values of requested outdoor capacity and power consumption are adjusted proportionally.

2 Selection in heating mode

2 - 3 Example

2 - 3 - 1 Design conditions

- Determine indoor / outdoor design temperature

  Indoor: 18° CDB

  Ambient: 2.2° CWB / 3° CDB

- Determine room peak loads (and if possible, system peak loads = optional)

Design loads in kW (total heating capacity)

Time	A	B	C	D	E	F	G	H	Sum
9h00	*3.1*	2.3	1.9	3.8	3.2	*4.1*	3.5	2	23.9 kW
13h00	2.8	*2.9*	1.5	3.7	*4.1*	3.7	*4*	2.2	24.9 kW
17h00	2.2	2	*2.7*	*4.5*	3.6	3.3	2.7	*3.2*	24.2 kW

Sum Room Peak loads 28.6 kW

System Peak Load 24.9 kW Max capacity requested from outdoor unit

2 - 3 - 2 Safety factor

In this example, safety factor does not use.

2 - 3 - 3 Selection of indoor unit

FXCQ indoor unit

	A	B	C	D	E	F	G	H	Sum
FXCQ	**25**	**25**	**25**	**40**	**40**	**40**	**40**	**25**	**260**
kW	**3.4**	**3.4**	**3.4**	**5.2**	**5.2**	**5.2**	**5.2**	**3.4**	**34.4**

* the capacity is selected according to the design conditions (indoor 18° CDB; ambient 6° CWB / 7° CDB)

NOTE

1 The new selection method, for the indoor unit selection, does not take into account the outdoor temperature. Therefore take the rated outdoor temperatures when looking up in the indoor unit capacity table (35° CDB for cooling, 7° CDB for heating)

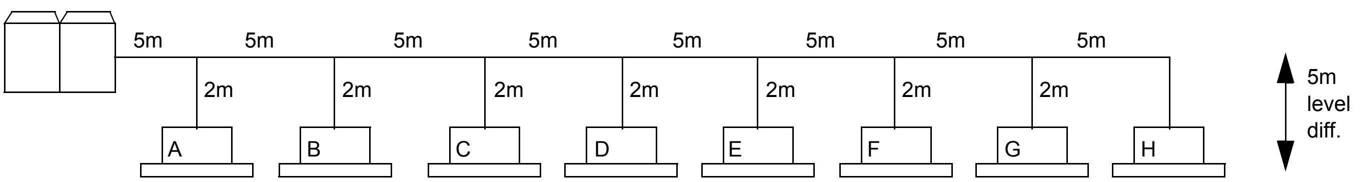
2 - 3 - 4 Check heat load

Total heating capacity of indoors > heat load

33.4>24.9 kW

2 - 3 - 5 Conditions for outdoor unit selection:

- Total capacity index of indoor units = 260 OK
- Number of Selected indoors = 8 OK
- Equivalent piping length and level difference



Equivalent pipe length (*) = 43.5 meter

(*) Length to furthest indoor unit including equiv. Pipe length of refnets (0.5 meter per refnet)

2
2

2 Selection in heating mode

2 - 3 Example

2 - 3 - 6 Define heating capacity to be given by outdoor unit system:

Total heating load

- Sum of peak loads = 28.6 kW
- System peak load = 24.9 kW

Correct total heat load

Table: Coefficient of loss per meter of piping with insulation thickness of 10mm

Correction factor	HLC (%/m)	HLH (%/m)
Ambient temperature	Cooling	Heating
-15		0.100
-10		0.093
-5		0.086
0		0.078
5	0.000	0.071
10	0.000	0.064
15	0.004	0.057
20	0.009	0.049
25	0.014	
30	0.022	
35	0.030	
40	0.038	

For 3° CDB ambient temperature, the heat loss factor is 0.0752% (interpolated).

For the piping length, the first 7.5m is not considered

⇨ 43.5m - 7.5m = 36m

Heat loss factor * actual piping run

⇨ 0.0752% * 36m = 0.027072

total cooling load x (1 + (heat loss factor x actual pipe run))

⇨ 24.9*(1 + 0.027072) = 25.6

2 Selection in heating mode

2 - 3 Example

2 - 3 - 7 Selection of outdoor unit

- select outdoor unit type
  RXYQ8P outdoor unit

Indoor unit combination total capacity index table

Outdoor unit	Indoor unit combination ratio								
	130 %	120 %	110 %	100 %	90 %	80 %	70%	60 %	50 %
4HP	130	120	110	100	90	80	70	60	50
5HP	162.5	150	137.5	125	112.5	100	87.5	75	62.5
6HP	182	168	154	140	126	112	98	84	70
8HP	260	240	220	200	180	160	140	120	100
10HP	325	300	275	250	225	200	175	150	125
12HP	390	360	330	300	270	240	210	180	150
14HP	455	420	385	350	315	280	245	210	175
16HP	520	480	440	400	360	320	280	240	200
18HP	585	540	495	450	405	360	315	270	225
20HP	650	600	550	500	450	400	350	300	250
22HP	715	660	605	550	495	440	385	330	275
24HP	780	720	660	600	540	480	420	360	300
26HP	845	780	715	650	585	520	455	390	325
28HP	910	840	770	700	630	560	490	420	350
30HP	975	900	825	750	675	600	525	450	375
32HP	1,040	960	880	800	720	640	560	480	400
34HP	1,105	1,020	935	850	765	680	595	510	425
36HP	1,170	1,080	990	900	810	720	630	540	450
38HP	1,235	1,140	1,045	950	855	760	665	570	475
40HP	1,300	1,200	1,100	1,000	900	800	700	600	500
42HP	1,365	1,260	1,155	1,050	945	840	735	630	525
44HP	1,430	1,320	1,210	1,100	990	880	770	660	550
46HP	1,495	1,380	1,265	1,150	1,035	920	805	690	575
48HP	1,560	1,440	1,320	1,200	1,080	960	840	720	600
50HP	1,625	1,500	1,375	1,250	1,125	1,000	875	750	625
52HP	1,690	1,560	1,430	1,300	1,170	1,040	910	780	650
54HP	1,755	1,620	1,485	1,350	1,215	1,080	945	810	675

- Determine max. allowed connection ratio
  Max. 130% connection ratio

At 2.2° CWB/3° CDB ambient, 18° CDB indoor, the heating capacity outdoor = 26,8 kW (cfr. Capacity table in databook)

The outdoor unit gives 26.8 kW whereas the required capacity is 25.6 kW.

2 - 3 - 8 Defrost factor

The outdoor unit gives 26.8 kW, but still a defrost factor needs to be considered.
The defrost factor for 3° CDB, is 0.83, so this factor decreases the total outdoor unit capacity.
⇨ 26.8 kW * 0.83 = 22.24 kW.

This means that the 8 HP unit is not sufficient to reach the required capacity of 25.6 kW.
Size up to 10 HP and recheck the values.
⇨ The heating capacity outdoor is 33.6 kW, and after defrost factor correction it is 27.9 kW.

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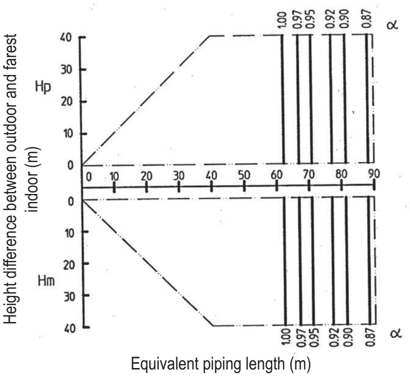
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3 Capacity correction ratio

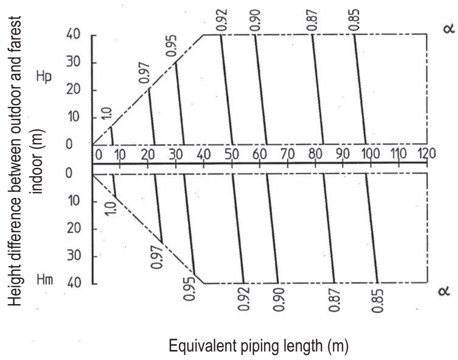
3 - 1 VRV®III heat recovery with connection to heating only hydrobox

REYAQ10P

1. Rate of change in heating capacity



2. Rate of change in cooling capacity



[Explanation of symbols]
Hp: Level difference (m) between indoor and outdoor unit (outdoor unit is on highest location)
Hm: Level difference (m) between indoor and outdoor unit (outdoor unit is on lowest location)

3TW60652-2A

NOTES

[Capacity correction]

1. These figures illustrate the rate of change in capacity (α) of a standard indoor unit system at maximum load under standard conditions.
   Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the figures above.

2. With this outdoor unit, constant evaporating pressure control during cooling and constant condensing pressure control during heating is carried out.

3. Method of calculating capacity (connection ratio ≤ 100%)
   [Capacity] = [Capacity under 100% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]
   Method of calculating capacity (connection ratio > 100%)
   [Capacity] = [Capacity under xxx% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]

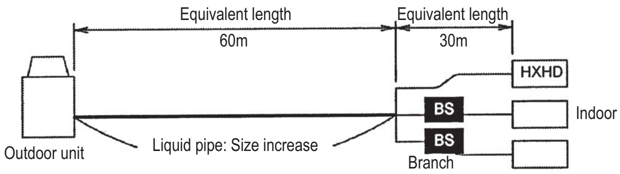
[Equivalent piping length correction]

4. When overall equivalent piping length is 90m or more, the diameter of the main liquid pipes must be increased.

5. [Overall equivalent piping length] = [equivalent piping length to main pipe] X [correction factor (β)] + [equivalent length after branching]

Model	Liquid standard	Liquid increased	Correction factor (β) (heating)	Correction factor (β) (cooling)
REYAQ10P	9.5 Ø	12.7 Ø	0.2	0.5

[EXAMPLE]



A. Overall equivalent piping length = 60m X 0.2 + 30 = 42m (heating; β=0.2)

B. Overall equivalent piping length = 60m X 0.5 + 30 = 60m (cooling; β=0.5)

C. The correction factor for capacity when H=0m: α = 1 (heating)

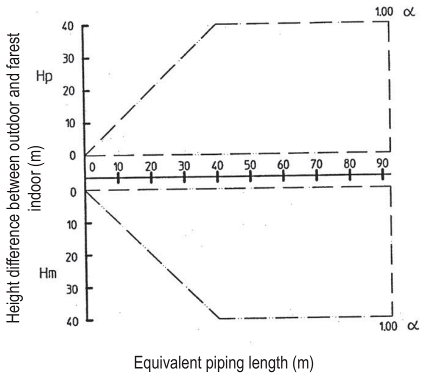
D. The correction factor for capacity when H=0m: α = 0.91 (cooling)

3 Capacity correction ratio

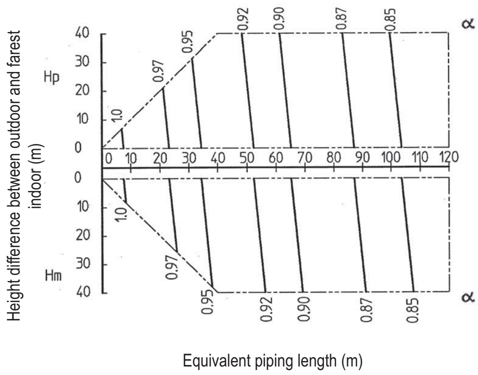
3 - 1 VRV®III heat recovery with connection to heating only hydrobox

REYAQ12P

1. Rate of change in heating capacity



2. Rate of change in cooling capacity



[Explanation of symbols]
Hp: Level difference (m) between indoor and outdoor unit (outdoor unit is on highest location)
Hm: Level difference (m) between indoor and outdoor unit (outdoor unit is on lowest location)

3TW60652-2A

NOTES

[Capacity correction]

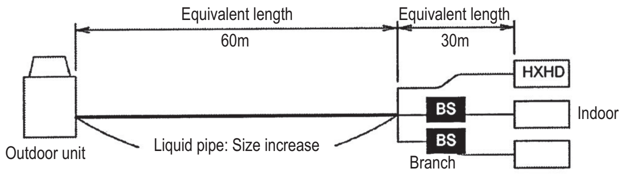
1. These figures illustrate the rate of change in capacity (α) of a standard indoor unit system at maximum load under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the figures above.
2. With this outdoor unit, constant evaporating pressure control during cooling and constant condensing pressure control during heating is carried out.
3. Method of calculating capacity (connection ratio ≤ 100%)
   [Capacity] = [Capacity under 100% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]
   Method of calculating capacity (connection ratio > 100%)
   [Capacity] = [Capacity under xxx% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]

[Equivalent piping length correction]

4. When overall equivalent piping length is 90m or more, the diameter of the main liquid pipes must be increased.
5. [Overall equivalent piping length] = [equivalent piping length to main pipe] X [correction factor (β)] + [equivalent length after branching]

Model	Liquid standard	Liquid increased	Correction factor (β) (heating)	Correction factor (β) (cooling)
REYAQ12P	12.7 Ø	15.9 Ø	0.3	0.5

[EXAMPLE]



A. Overall equivalent piping length = 60m X 0.3 + 30 = 48m (heating; β=0.3)

B. Overall equivalent piping length = 60m X 0.5 + 30 = 60m (cooling; β=0.5)

C. The correction factor for capacity when H=0m: α = 1 (heating)

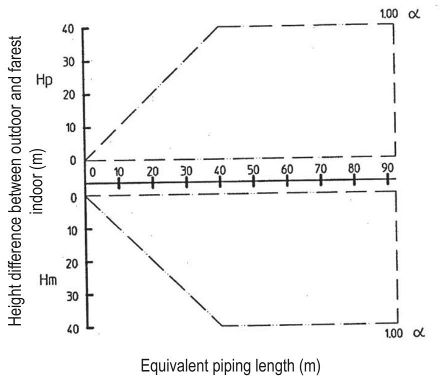
D. The correction factor for capacity when H=0m: α = 0.91 (cooling)

3 Capacity correction ratio

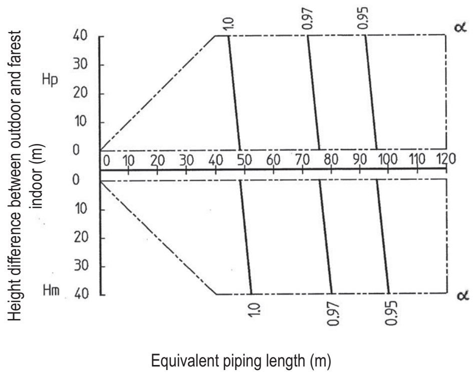
3 - 1 VRV®III heat recovery with connection to heating only hydrobox

REYAQ14P

1. Rate of change in heating capacity



2. Rate of change in cooling capacity



[Explanation of symbols]
Hp: Level difference (m) between indoor and outdoor unit (outdoor unit is on highest location)
Hm: Level difference (m) between indoor and outdoor unit (outdoor unit is on lowest location)

3TW60652-2A

NOTES

[Capacity correction]

1. These figures illustrate the rate of change in capacity (α) of a standard indoor unit system at maximum load under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the figures above.

2. With this outdoor unit, constant evaporating pressure control during cooling and constant condensing pressure control during heating is carried out.

3. Method of calculating capacity (connection ratio ≤ 100%)
[Capacity] = [Capacity under 100% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]
Method of calculating capacity (connection ratio > 100%)
[Capacity] = [Capacity under xxx% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]

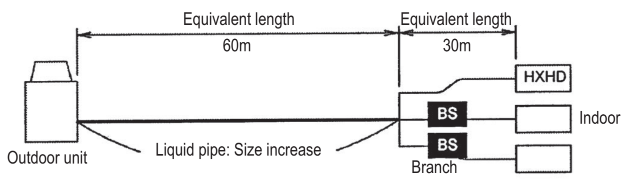
[Equivalent piping length correction]

4. When overall equivalent piping length is 90m or more, the diameter of the main liquid pipes must be increased.

5. [Overall equivalent piping length] = [equivalent piping length to main pipe] X [correction factor (β)] + [equivalent length after branching]

Model	Liquid standard	Liquid increased	Correction factor (β) (heating)	Correction factor (β) (cooling)
REYAQ14P	12.7 Ø	15.9 Ø	0.3	0.5

[EXAMPLE]



A. Overall equivalent piping length = 60m X 0.3 + 30 = 48m (heating; β=0.3)

B. Overall equivalent piping length = 60m X 0.5 + 30 = 60m (cooling; β=0.5)

C. The correction factor for capacity when H=0m: α = 1 (heating)

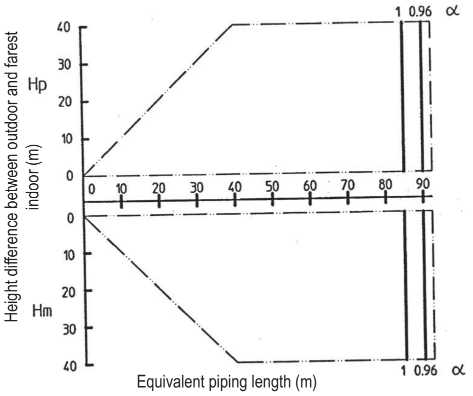
D. The correction factor for capacity when H=0m: α = 0.99 (cooling)

3 Capacity correction ratio

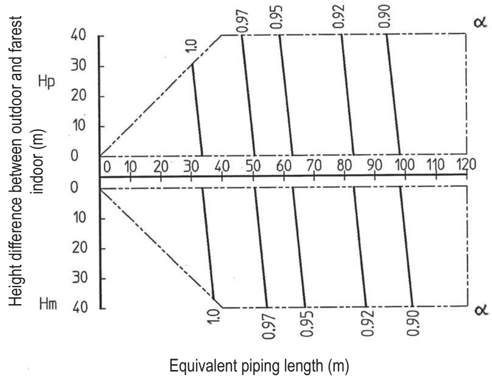
3 - 1 VRV®III heat recovery with connection to heating only hydrobox

REYAQ16P

1. Rate of change in heating capacity



2. Rate of change in cooling capacity



[Explanation of symbols]
Hp: Level difference (m) between indoor and outdoor unit (outdoor unit is on highest location)
Hm: Level difference (m) between indoor and outdoor unit (outdoor unit is on lowest location)

3TW60652-2A

NOTES

[Capacity correction]

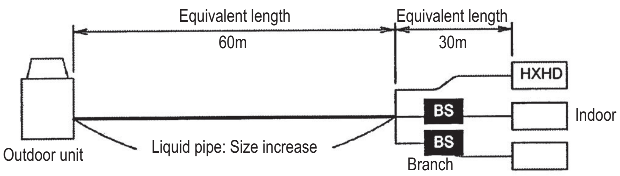
1. These figures illustrate the rate of change in capacity (α) of a standard indoor unit system at maximum load under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the figures above.
2. With this outdoor unit, constant evaporating pressure control during cooling and constant condensing pressure control during heating is carried out.
3. Method of calculating capacity (connection ratio ≤ 100%)
[Capacity] = [Capacity under 100% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]
Method of calculating capacity (connection ratio > 100%)
[Capacity] = [Capacity under xxx% connection ratio (capacity table)] X (correction factor for capacity (α) due to piping length to farest indoor unit]

[Equivalent piping length correction]

4. When overall equivalent piping length is 90m or more, the diameter of the main liquid pipes must be increased.
5. [Overall equivalent piping length] = [equivalent piping length to main pipe] X [correction factor (β)] + [equivalent length after branching]

Model	Liquid standard	Liquid increased	Correction factor (β) (heating)	Correction factor (β) (cooling)
REYAQ16P	12.7 Ø	15.9 Ø	0.3	0.5

[EXAMPLE]



A. Overall equivalent piping length = 60m X 0.3 + 30 = 48m (heating; β=0.3)

B. Overall equivalent piping length = 60m X 0.5 + 30 = 60m (cooling; β=0.5)

C. The correction factor for capacity when H=0m: α = 1 (heating)

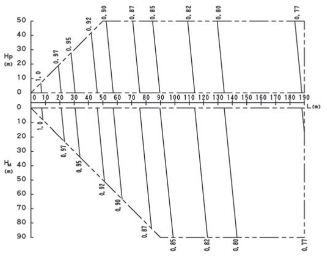
D. The correction factor for capacity when H=0m: α = 0.955 (cooling)

3 Capacity correction ratio

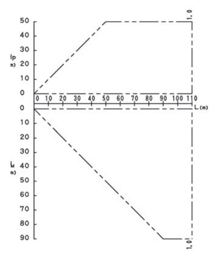
3 - 2 VRV®III heat recovery small footprint combination

REYQ8P9, REYQ22P8

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D057931B

NOTES

1 These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3 Method of calculating A/C (cooling / heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.
Calculating A/C capacity of outdoor units
- Condition: Indoor unit combination ratio does not exceed 100%
Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristics table at the 100% combination
x capacity change rate due to piping length to the farthest indoor unit
Condition: Indoor unit combination ratio exceeds 100%
Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristics table at the combination
x capacity change rate due to piping length to the farthest indoor unit

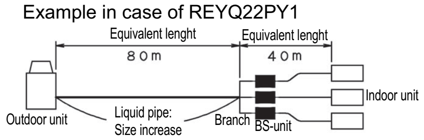
4 When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
[Diameter of above case]

Model	Liquid
REYQ8P9Y1B	Ø12.7
REYQ22P8Y1B	Ø19.1

5 When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x Correction factor + Equivalent length after branching
Choose a correction factor from the following table.

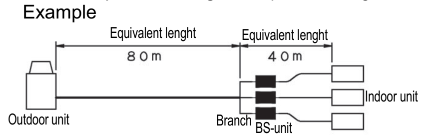
Model	Correction factor
REYQ8P9Y1B	0.2
REYQ22P8Y1B	0.4

Example in case of REYQ22PY1



In the above case (Heating)
Overall equivalent length = 80m x 0.4 + 40m = 72m
The correction factor in capacity when Hp=0m is thus approximately 1.0

6 In combination wich does not include cooling only indoor unit.
Calculate the equivalent length pipe by the following when you calculate cooling capacity
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Cooling)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when Hp=0m is thus approximately 0.86

EXPLANATION OF SYMBOLS

H_P : Level difference (m) between indoor and outdoor units where indoor unit in inferior position
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position
L : Equivalent pipe length (m)
α : Rate of change in cooling / heating capacity
[Diameter of pipe (standard size)]

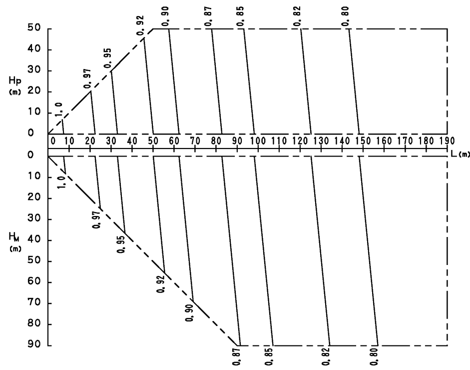
Model	Liquid
REYQ8P9Y1B	Ø9.5
REYQ22P8Y1B	Ø15.9

3 Capacity correction ratio

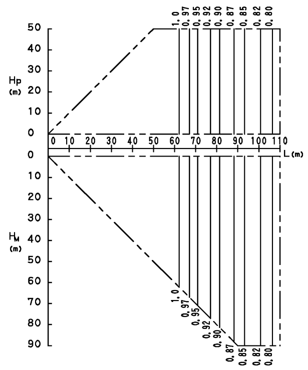
3 - 2 VRV®III heat recovery small footprint combination

REYQ10P8

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of pipe (standard size)]

Model	Liquid
REYQ10P8Y1B	ø 9,5

[Explanation of symbols]
Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position
Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position
L: Equivalent pipe length (m)
α: Capacity correction factor

3D058181A

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination x Capacity change rate due to piping length to the farthest indoor unit

   - Condition: Indoor unit combination ratio exceeds 100%.

   Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination x Capacity change rate due to piping length to the farthest indoor unit

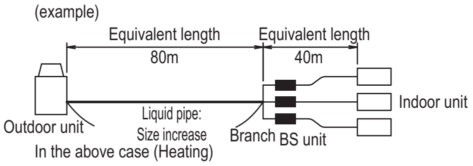
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When the level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYQ10P8Y1B	ø 12.7

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent lenght should be calculated as follows. (Heating only)

   Overall equivalent length =Equivalent length to main pipe x 0.2 + Equivalent length after branching

   (example)

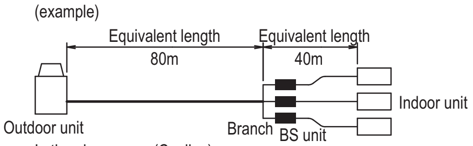


   In the above case (Heating)
   Overall equivalent length = 80m x 0.2 + 40m = 56m
   The correction factor in capacity when Hp = 0m is thus approximately 1.0.

6. In combination which does not include cooling only indoor unit, calculate the equivalent length pipe by the following when you calculate cooling capacity.

   Overall equivalent length =Equivalent length to main pipe x 0.5 + Equivalent length after branching

   (example)



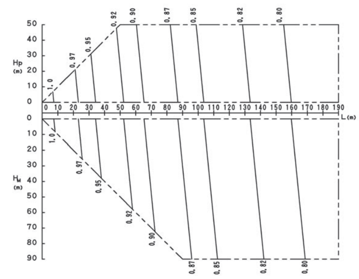
   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp = 0m is thus approximately 0.88

3 Capacity correction ratio

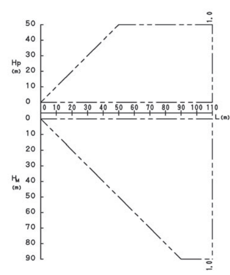
3 - 2 VRV®III heat recovery small footprint combination

REYQ26,28,30,38,40,42,44P8
REYQ12,18P9

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D057935B

NOTES

1 These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.

2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

3 Method of calculating A/C (cooling / heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.
Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%
  Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination x capacity change rate due to piping length to the farthest indoor unit
  Condition: Indoor unit combination ratio exceeds 100%
  Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination x capacity change rate due to piping length to the farthest indoor unit

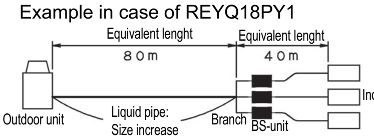
4 When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
[Diameter of above case]

Model	Liquid	Model	Liquid
REYQ12PY1(B)	Ø15.9	REYQ30P8Y1B	Ø22.2
REYQ12P8Y1B		REYQ38P8Y1B	
REYQ18P8Y1B	Ø19.1	REYQ40P8Y1B	
REYQ26P8Y1B	Ø22.2	REYQ42P8Y1B	
REYQ28P8Y1B		REYQ44P8Y1B	

5 When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x Correction factor + Equivalent length after branching
Choose a correction factor from the following table.

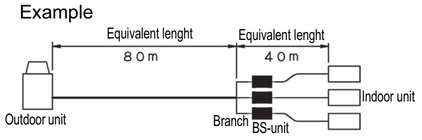
Model	Correction factor	Model	Correction factor
REYQ12PY1(B)	0.3	REYQ38P8Y1B	0.4
REYQ12P8Y1B		REYQ40P8Y1B	
REYQ18P8Y1B	0.4	REYQ42P8Y1B	
REYQ26P8Y1B		REYQ44P8Y1B	
REYQ28P8Y1B			
REYQ30P8Y1B			

Example in case of REYQ18PY1



In the above case (Heating)
Overall equivalent length = 80m x 0.4 + 40m = 72m
The correction factor in capacity when Hp=0m is thus approximately 1.0

6 In combination which does not include cooling only indoor unit.
Calculate the equivalent length pipe by the following when you calculate cooling capacity
Overall equivalent length =
Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Cooling)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when Hp=0m is thus approximately 0.88

EXPLANATION OF SYMBOLS

H_p : Level difference (m) between indoor and outdoor units where indoor unit in inferior position
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

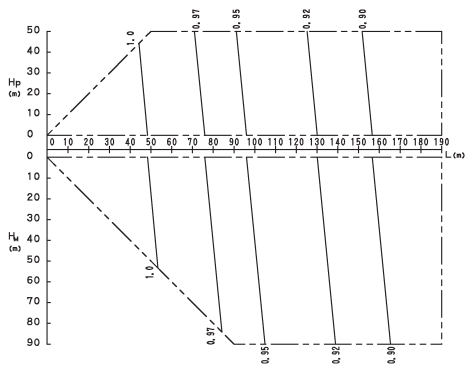
Model	liquid	Model	liquid
REYQ12PY1(B)	Ø12.7	REYQ38P8Y1B	Ø19.1
REYQ12P8Y1(B)		REYQ40P8Y1B	
REYQ18P8Y1B	Ø15.9	REYQ42P8Y1B	
REYQ26P8Y1B	Ø19.1	REYQ44P8Y1B	
REYQ28P8Y1B			
REYQ30P8Y1B			

3 Capacity correction ratio

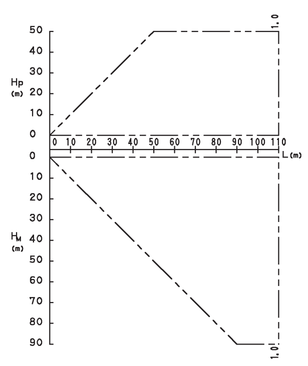
3 - 2 VRV®III heat recovery small footprint combination

REYQ14P8

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of pipe (standard size)]

Model	Liquid
REYQ14P8Y1B	ø 12,7

[Explanation of symbols]
Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position
Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position
L: Equivalent pipe length (m)
α: Capacity correction factor

3D058182A

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination x Capacity change rate due to piping length to the farthest indoor unit

   - Condition: Indoor unit combination ratio exceeds 100%.

   Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination x Capacity change rate due to piping length to the farthest indoor unit

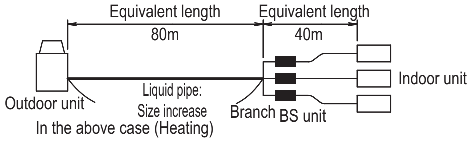
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When the level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYQ14P8Y1B	ø 15.9

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent lenght should be calculated as follows. (Heating only)

   Overall equivalent length =Equivalent length to main pipe x 0.3 + Equivalent length after branching

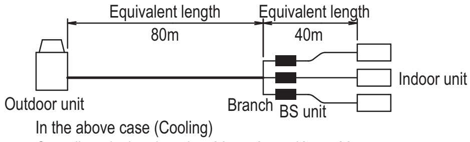
   (example)



   In the above case (Heating)
   Overall equivalent length = 80m x 0.3 + 40m = 64m
   The correction factor in capacity when Hp = 0m is thus approximately 1.0.
6. In combination which does not include cooling only indoor unit, calculate the equivalent length pipe by the following when you calculate cooling capacity.

   Overall equivalent length =Equivalent length to main pipe x 0.5 + Equivalent length after branching

   (example)



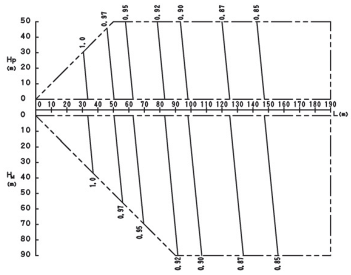
   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp = 0m is thus approximately 0.96

3 Capacity correction ratio

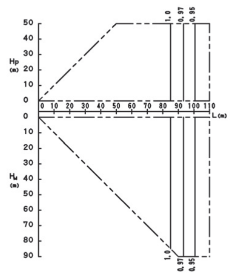
3 - 2 VRV®III heat recovery small footprint combination

REYQ16P8

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D058183A

NOTES

1 These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.

2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

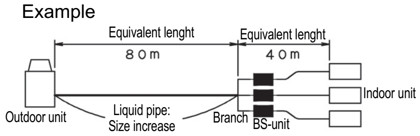
3 Method of calculating A/C (cooling / heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.
Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%
  Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristics table at the 100% combination
  x capacity change rate due to piping length to the farthest indoor unit
  Condition: Indoor unit combination ratio exceeds 100%
  Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristics table at the combination
  x capacity change rate due to piping length to the farthest indoor unit

4 When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
When level difference is 50m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
[Diameter of above case]

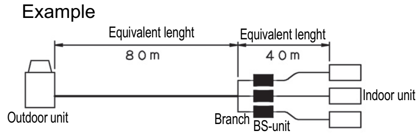
Model	Liquid
REYQ16P9Y1B	Ø15.9

5 When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.3 + Equivalent length after branching
Choose a correction factor from the following table.
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.3 + 40m = 64m
The correction factor in capacity when Hp=0m is thus approximately 1.0

6 In combination wich does not include cooling only indoor unit.
Calculate the equivalent length pipe by the following when you calculate cooling capacity
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Cooling)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when Hp=0m is thus approximately 0.93

EXPLANATION OF SYMBOLS

H_p : Level difference (m) between indoor and outdoor units where indoor unit in inferior position
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position
L : Equivalent pipe length (m)
α : Rate of change in cooling / heating capacity

[Diameter of pipe (standard size)]

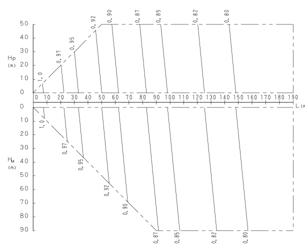
Model	Liquid
REYQ16P9Y1B	Ø12.7

3 Capacity correction ratio

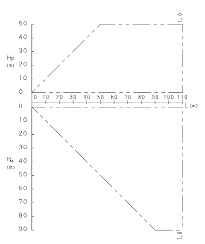
3 - 2 VRV®III heat recovery small footprint combination

REYQ20,32,34P8

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057933

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

   Calculating A/C capacity of outdoor units

   - Condition: Indoor unit combination ratio does not exceed 100%.

     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination
     X Capacity change rate due to piping length to the farthest indoor unit

   - Condition: Indoor unit combination ratio exceeds 100%.

     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination
     X Capacity change rate due to piping length to the farthest indoor unit

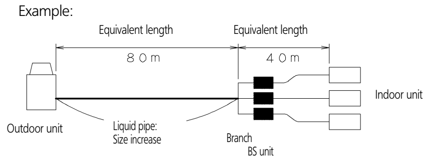
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYQ20P8Y1B	Φ 19.1
REYQ32P8Y1B	Φ 22.2
REYQ34P8Y1B	

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

   Overall equivalent length = Equivalent length to main pipe x 0.4 + Equivalent length after branching

   Example:

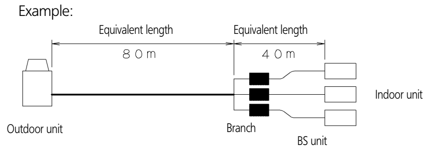


   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 1.0.

6. In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.

   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

   Example:



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.88.

Explanation of symbols

H_P : Level difference (m) between indoor and outdoor units where indoor unit in inferior position.
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position.
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

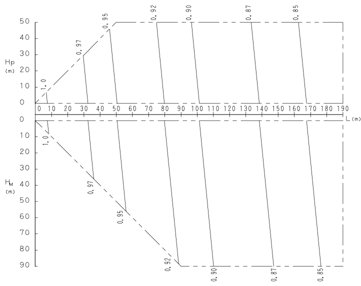
Model	Liquid
REYQ20P8Y1B	Φ 15.9
REYQ32P8Y1B	Φ 19.1
REYQ34P8Y1B	

3 Capacity correction ratio

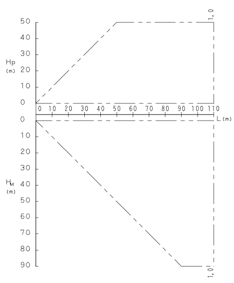
3 - 2 VRV®III heat recovery small footprint combination

REYQ24P8

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057932

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

   Calculating A/C capacity of outdoor units

   - Condition: Indoor unit combination ratio does not exceed 100%.

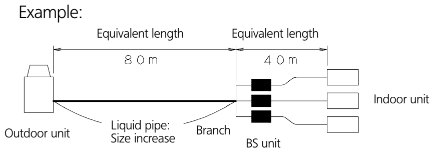
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination
     X Capacity change rate due to piping length to the farthest indoor unit
   - Condition: Indoor unit combination ratio exceeds 100%.

     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination
     X Capacity change rate due to piping length to the farthest indoor unit
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYQ24P8Y1B	Φ19.1

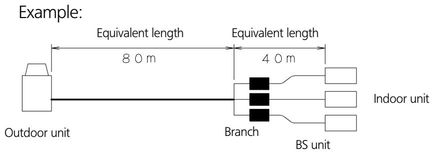
5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
   Overall equivalent length = Equivalent length to main pipe x 0.4 + Equivalent length after branching

   Example:



   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 1.0.
6. In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.
   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

   Example:



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.91.

Explanation of symbols

H_P : Level difference (m) between indoor and outdoor units where indoor unit in inferior position.
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position.
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

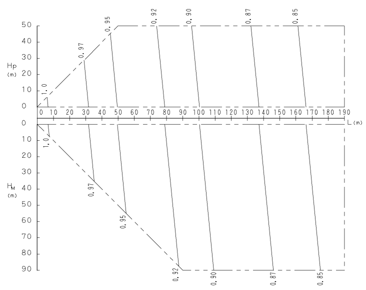
Model	Liquid
REYQ24P8Y1B	Φ15.9

3 Capacity correction ratio

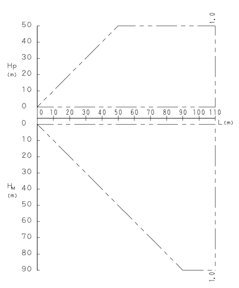
3 - 2 VRV®III heat recovery small footprint combination

REYQ36P9

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057934

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

   Calculating A/C capacity of outdoor units
   - Condition: Indoor unit combination ratio does not exceed 100%.

     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination X Capacity change rate due to piping length to the farthest indoor unit
   - Condition: Indoor unit combination ratio exceeds 100%.

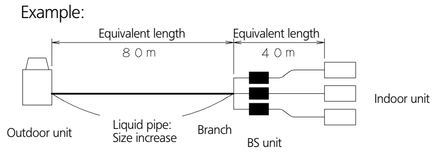
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination X Capacity change rate due to piping length to the farthest indoor unit
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYQ36P9Y1B	Φ 22.2

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

   Overall equivalent length = Equivalent length to main pipe x 0.4 + Equivalent length after branching

   Example:

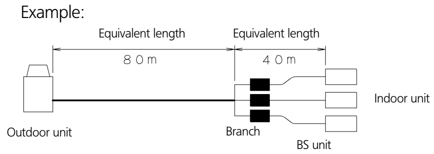


   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 1.0.

6. In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.

   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

   Example:



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.92.

Explanation of symbols

H_p : Level difference (m) between indoor and outdoor units where indoor unit in inferior position.
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position.
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

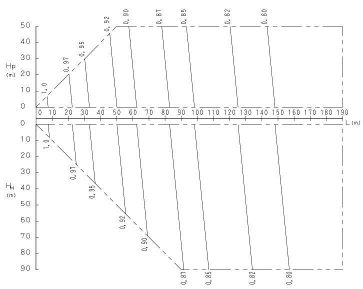
Model	Liquid
REYQ36P9Y1B	Φ19.1

3 Capacity correction ratio

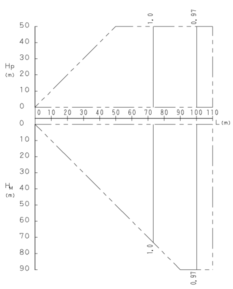
3 - 2 VRV®III heat recovery small footprint combination

REYQ46P8

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057936

NOTES

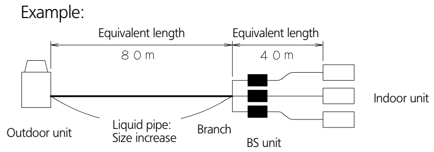
1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

   Calculating A/C capacity of outdoor units
   - Condition: Indoor unit combination ratio does not exceed 100%.
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination
     X Capacity change rate due to piping length to the farthest indoor unit
   - Condition: Indoor unit combination ratio exceeds 100%.
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination
     X Capacity change rate due to piping length to the farthest indoor unit
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYQ46P8Y1B	Φ 22.2

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
   Overall equivalent length = Equivalent length to main pipe x 0.4 + Equivalent length after branching

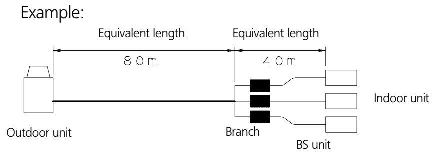
   Example:



   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 0.98.

6. In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.
   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

   Example:



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.88.

Explanation of symbols

H_P : Level difference (m) between indoor and outdoor units where indoor unit in inferior position.
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position.
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

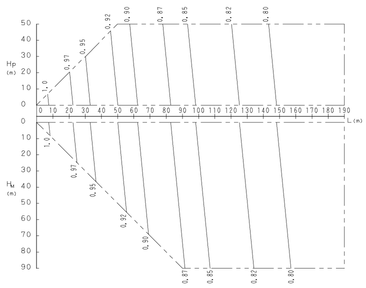
Model	Liquid
REYQ46P8Y1B	Φ19.1

3 Capacity correction ratio

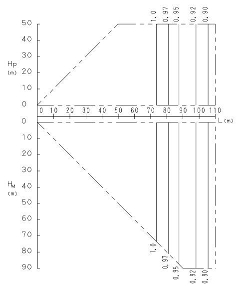
3 - 2 VRV®III heat recovery small footprint combination

REYQ48P8

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057937

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

   Calculating A/C capacity of outdoor units

   - Condition: Indoor unit combination ratio does not exceed 100%.

     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination
     X Capacity change rate due to piping length to the farthest indoor unit
   - Condition: Indoor unit combination ratio exceeds 100%.

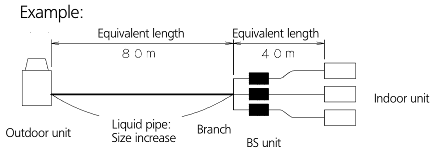
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination
     X Capacity change rate due to piping length to the farthest indoor unit
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYQ48P8Y1B	Φ22.2

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

   Overall equivalent length = Equivalent length to main pipe x 0.4 + Equivalent length after branching

   Example:

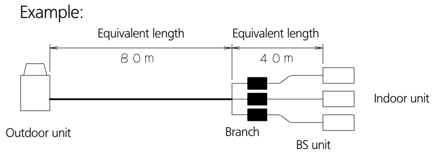


   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 0.97.

6. In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.

   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

   Example:



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.88.

Explanation of symbols

H_p : Level difference (m) between indoor and outdoor units where indoor unit in inferior position.
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position.
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

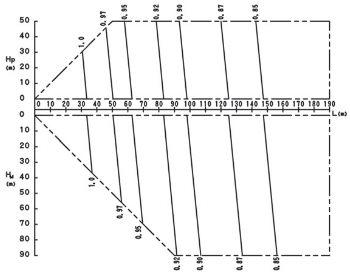
Model	Liquid
REYQ48P8Y1B	Φ19.1

3 Capacity correction ratio

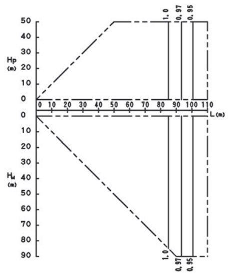
3 - 3 VRV® III heat recovery high COP combination

REYHQ16P

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D058183A

NOTES

1 These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.

2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

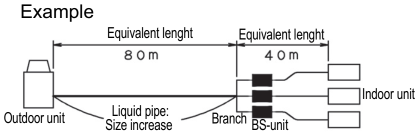
3 Method of calculating A/C (cooling / heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.
Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%
Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristics table at the 100% combination
x capacity change rate due to piping length to the farthest indoor unit
Condition: Indoor unit combination ratio exceeds 100%
Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristics table at the combination
x capacity change rate due to piping length to the farthest indoor unit

4 When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
When level difference is 50m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
[Diameter of above case]

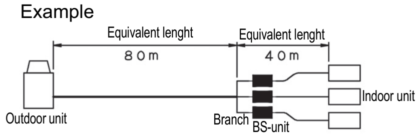
Model	Liquid
REYQ16P9Y1B	Ø15.9

5 When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.3 + Equivalent length after branching
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.3 + 40m = 64m
The correction factor in capacity when Hp=0m is thus approximately 1.0

6 In combination wich does not include cooling onlyindoor unit.
Calculate the equivalent length pipe by the following when you calculate cooling capacity
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Cooling)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when Hp=0m is thus approximately 0.93

EXPLANATION OF SYMBOLS

H_p : Level difference (m) between indoor and outdoor units where indoor unit in inferior position
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position
L : Equivalent pipe length (m)
α : Rate of change in cooling / heating capacity

[Diameter of pipe (standard size)]

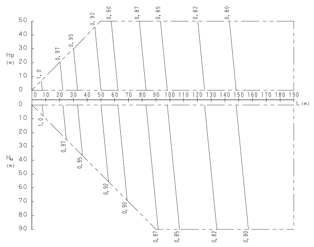
Model	Liquid
REYQ16P9Y1B	Ø12.7

3 Capacity correction ratio

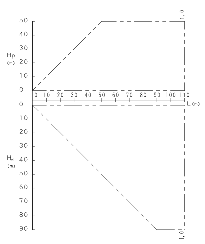
3 - 3 VRV®III heat recovery high COP combination

REYHQ20P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057933

NOTES

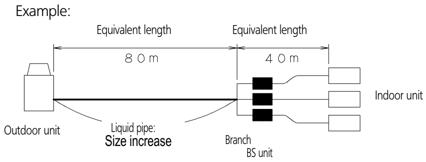
1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
   Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

   Calculating A/C capacity of outdoor units
   - Condition: Indoor unit combination ratio does not exceed 100%.
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination
     X Capacity change rate due to piping length to the farthest indoor unit
   - Condition: Indoor unit combination ratio exceeds 100%.
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination
     X Capacity change rate due to piping length to the farthest indoor unit
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYHQ20PY1B	Φ 19.1

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
   Overall equivalent length = Equivalent length to main pipe x 0.4 + Equivalent length after branching

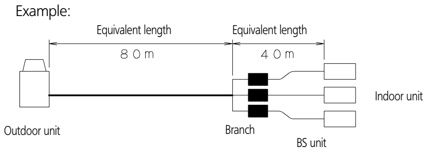
   Example:



   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 1.0.

6. In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.
   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

   Example:



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.88.

Explanation of symbols

H_P : Level difference (m) between indoor and outdoor units where indoor unit in inferior position.
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position.
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

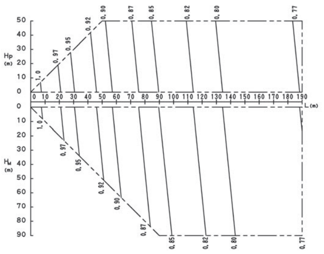
Model	Liquid
REYHQ20PY1B	Φ 15.9

3 Capacity correction ratio

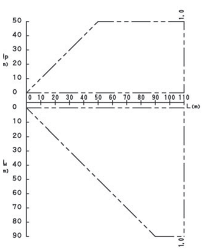
3 - 3 VRV®III heat recovery high COP combination

REYHQ22P

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D057931B

NOTES

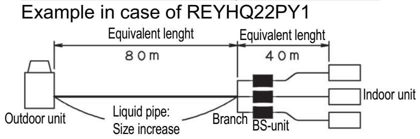
1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
   Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling / heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.
   Calculating A/C capacity of outdoor units
   - Condition: Indoor unit combination ratio does not exceed 100%
     Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination
     x capacity change rate due to piping length to the farthest indoor unit
     Condition: Indoor unit combination ratio exceeds 100%
     Maximum A./C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination
     x capacity change rate due to piping length to the farthest indoor unit
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYHQ22P8Y1B	Ø19.1

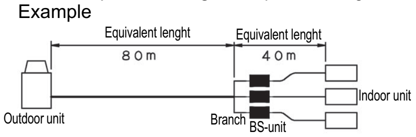
5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
   Overall equivalent length = Equivalent length to main pipe x Correction factor + Equivalent length after branching
   Choose a correction factor from the following table.

Model	Correction factor
REYHQ22P8Y1B	0.4

   Example in case of REYHQ22PY1



   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 1.0
6. In combination wich does not include cooling only indoor unit.
   Calculate the equivalent length pipe by the following when you calculate cooling capacity
   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
   Example



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.86

EXPLANATION OF SYMBOLS

H_p : Level difference (m) between indoor and outdoor units where indoor unit in inferior position
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position
L : Equivalent pipe length (m)
α : Capacity correction factor
[Diameter of pipe (standard size)]

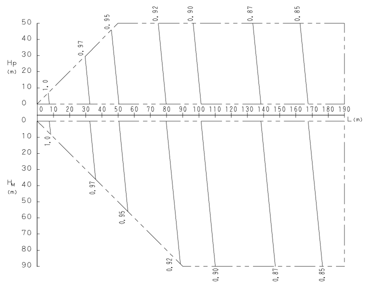
Model	Liquid
REYHQ22P8Y1B	Ø15.9

3 Capacity correction ratio

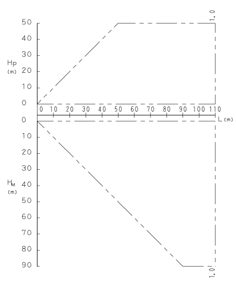
3 - 3 VRV®III heat recovery high COP combination

REYHQ24P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057932

NOTES

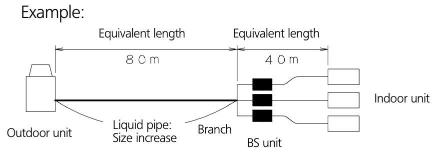
1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating A/C (cooling/heating) capacity:
   The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

   Calculating A/C capacity of outdoor units
   - Condition: Indoor unit combination ratio does not exceed 100%.
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination
     X Capacity change rate due to piping length to the farthest indoor unit
   - Condition: Indoor unit combination ratio exceeds 100%.
     Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination
     X Capacity change rate due to piping length to the farthest indoor unit
4. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
REYHQ24PY1B	Φ19.1

5. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
   Overall equivalent length = Equivalent length to main pipe x 0.4 + Equivalent length after branching

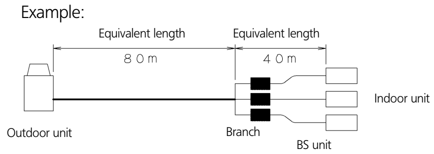
   Example:



   In the above case (Heating)
   Overall equivalent length = 80m x 0.4 + 40m = 72m
   The correction factor in capacity when Hp=0m is thus approximately 1.0.

6. In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.
   Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

   Example:



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp=0m is thus approximately 0.91.

Explanation of symbols

H_p : Level difference (m) between indoor and outdoor units where indoor unit in inferior position.
H_M : Level difference (m) between indoor and outdoor units where indoor unit in superior position.
L : Equivalent pipe length (m)
α : Capacity correction factor

[Diameter of pipe (standard size)]

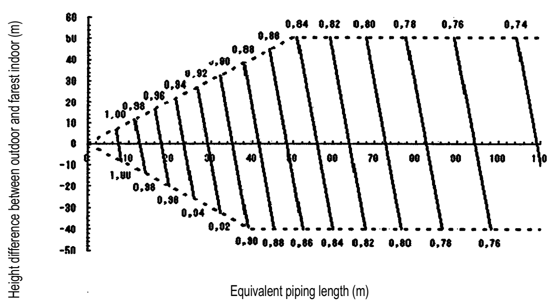
Model	Liquid
REYHQ24PY1B	Φ15.9

3 Capacity correction ratio

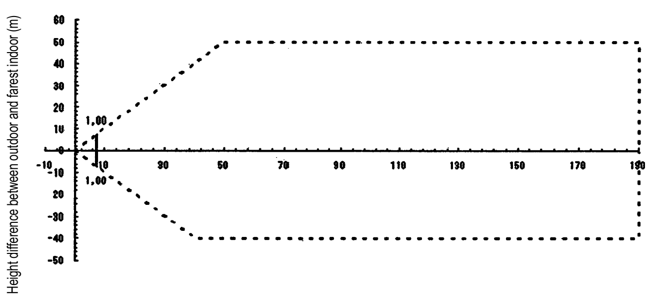
3 - 4 VRV®III heat pump small footprint combination

RXYQ5P

Correction ratio for cooling capacity



Correction ratio for heating capacity



3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units.
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   Condition: Indoor connection ratio does not exceed 100%
   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio X Correction ratio of piping to farest indoor
   Condition: Indoor connection ratio exceeds 100%
   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio X Correction ratio of piping to farest indoor
4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	gas	liquid
RXYQ5P	19.1	9.5

5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
   Diameter of main pipes (standard size)

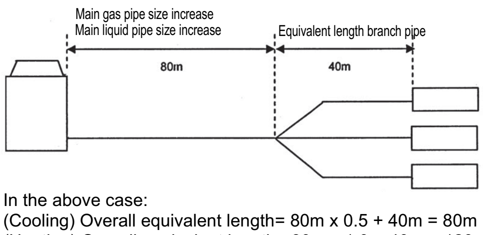
Model	gas	liquid
RXYQ5P	15.9	9.5

6. Equivalent length used in the above figures is based upon the following equivalent length
   equivalent piping length = equivalent length of main pipe X correction factor + equivalent length of branch pipes
   Choose the correction factor from the following table.

   When cooling capacity is calculated: gas pipe size
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	

Example



In the above case:
(Cooling) Overall equivalent length= 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length= 80m x 1.0 + 40m = 120m

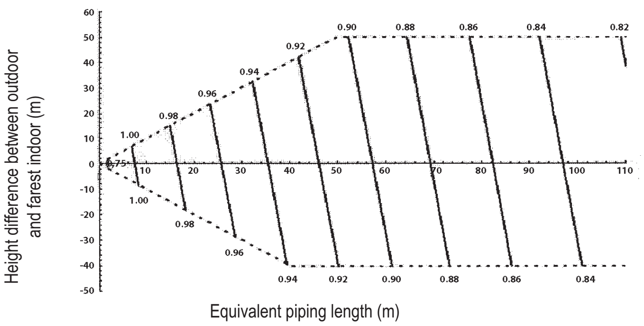
The rate of change in:
Cooling capacity when height difference = 0 is thus approximately 0.78
Heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

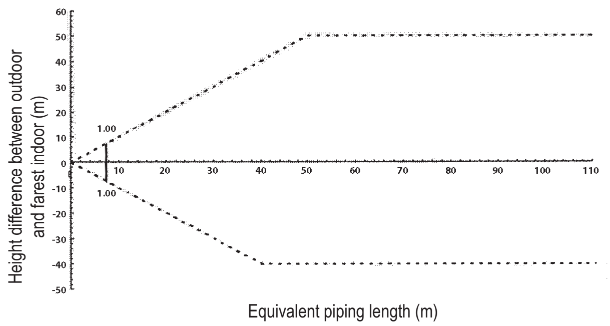
3 - 4 VRV®III heat pump small footprint combination

RXYQ8P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ8P9	19.1	9.5

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ8P9	22.2	12.7

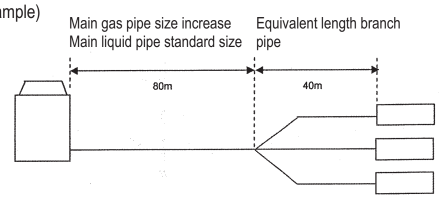
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

(example)



In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

The rate of change in cooling capacity when height difference = 0 is thus approximately 0.86
heating capacity when height difference = 0 is thus approximately 1.00

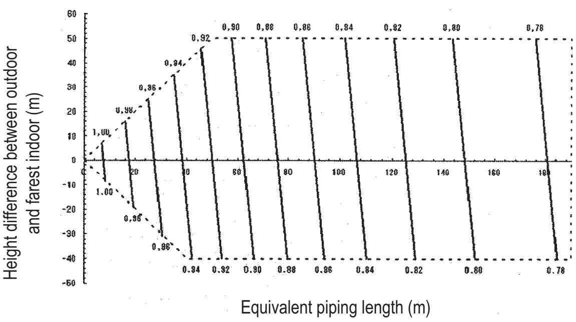
2
3

3 Capacity correction ratio

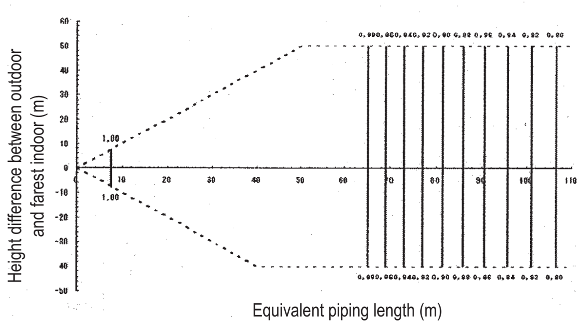
3 - 4 VRV®III heat pump small footprint combination

RXYQ10P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ10P9	22.2	9.5

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ10P9	25.4 *	12.7

   * If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

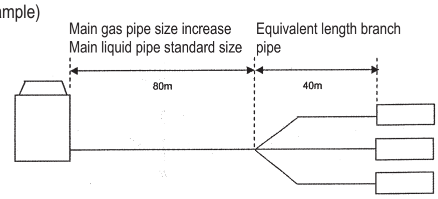
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

   (example)



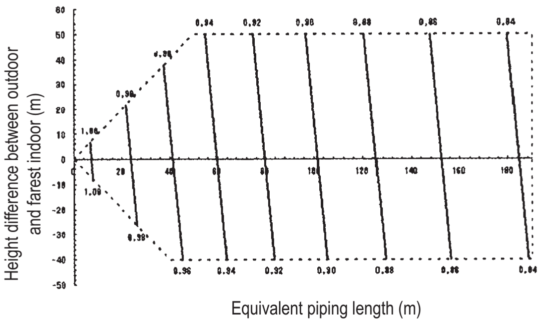
In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.87
heating capacity when height difference = 0 is thus approximately 0.90

3 Capacity correction ratio

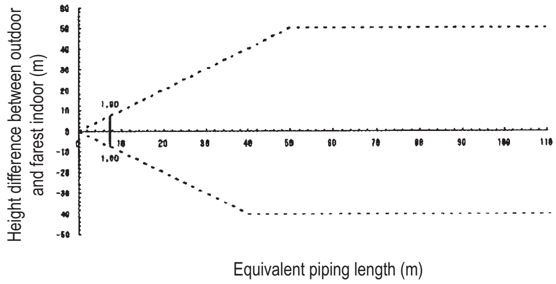
3 - 4 VRV®III heat pump small footprint combination

RXYQ12,14,24,36P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ12P9	28.6	12.7
RXYQ14P9	28.6	12.7
RXYQ24P9	34.9	15.9
RXYQ36P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ12P9	28.6	15.9
RXYQ14P9	28.6	15.9
RXYQ24P9	34.9	15.9
RXYQ36P9	41.3	19.1

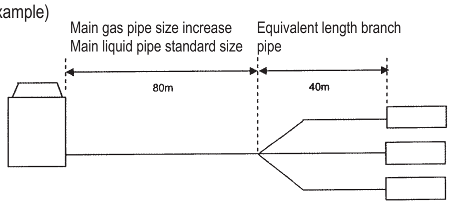
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

(example)



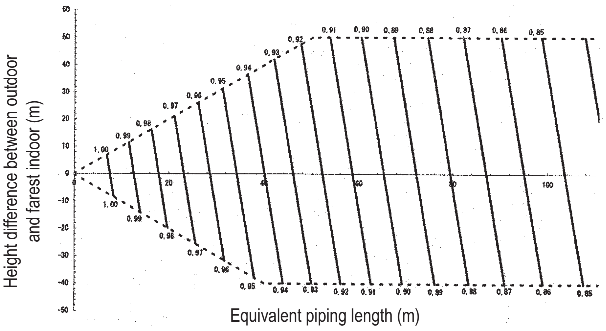
In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.89
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

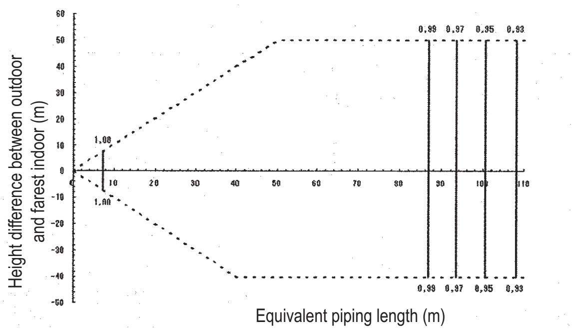
3 - 4 VRV®III heat pump small footprint combination

RXYQ16P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ16P9	28.6	12.7

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ16P9	31.8*	15.9

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

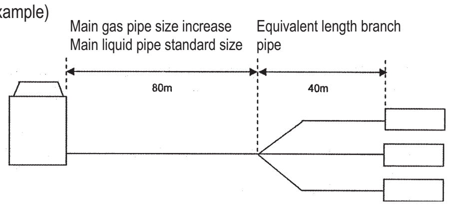
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

Choose the correction factor from the following table.
- When cooling capacity is calculated: gas pipe size
- When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

(example)



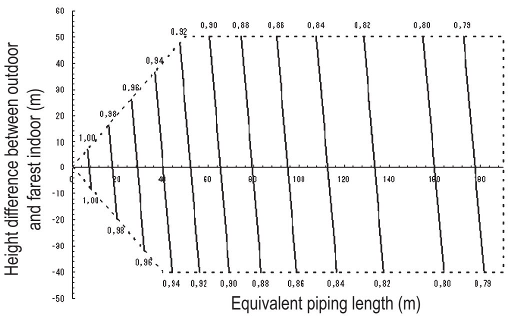
In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.88
heating capacity when height difference = 0 is thus approximately 0.99

3 Capacity correction ratio

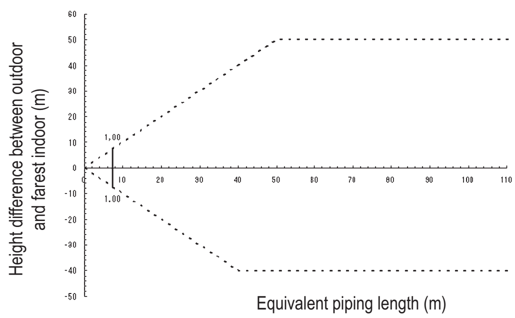
3 - 4 VRV®III heat pump small footprint combination

RXYQ18,36-30,38-44P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ18P9	28.6	15.9
RXYQ26-30P9	34.9	19.1
RXYQ38-44P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ18P9	31.8*	19.1
RXYQ26-30P9	38.1*	22.2
RXYQ38-44P9	41.3	22.2

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

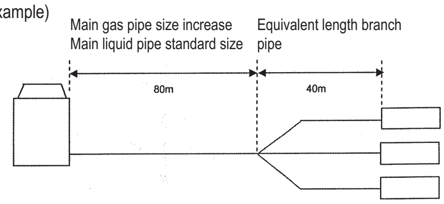
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

(example)



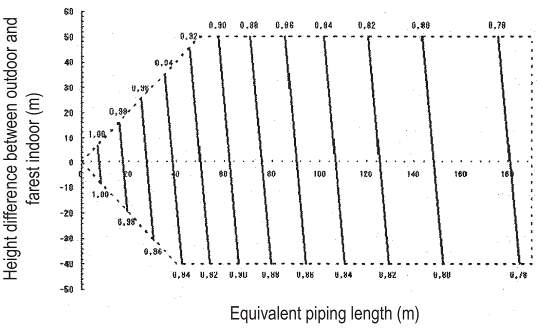
In the above case (for RXYQ38-44) (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.83
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

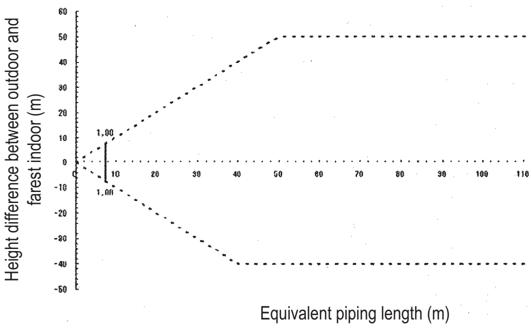
3 - 4 VRV®III heat pump small footprint combination

RXYQ20,32-34P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ20P9	28.6	15.9
RXYQ32-34P9	34.9	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ20P9	31.8*	19.1
RXYQ32-34P9	38.1*	22.2

   * If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

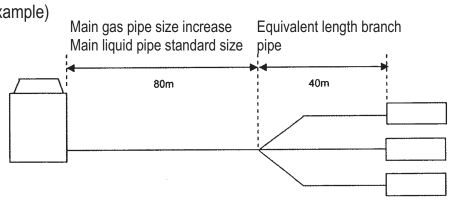
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

(example)



In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

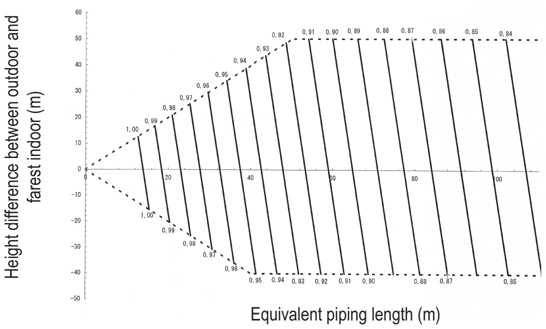
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.88
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

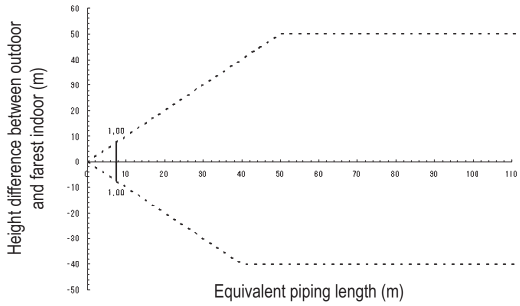
3 - 4 VRV®III heat pump small footprint combination

RXYQ22P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ22P9	28.6	15.9

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ22P9	31.8*	19.1

   * If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

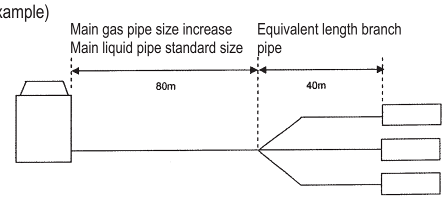
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

(example)



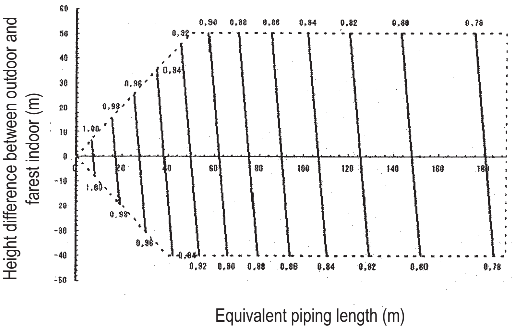
In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.88
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

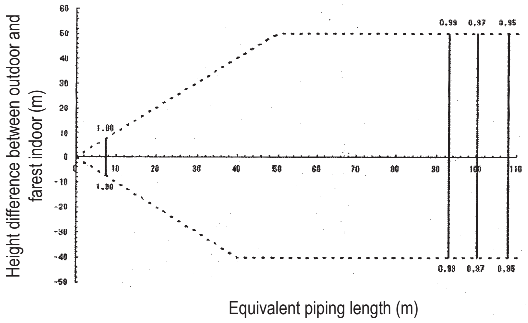
3 - 4 VRV®III heat pump small footprint combination

RXYQ46P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ46P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ46P9	41.3	22.2

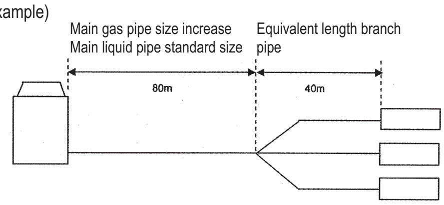
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

(example)



In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

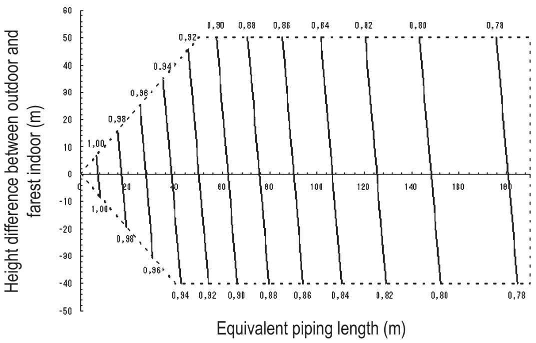
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.83
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

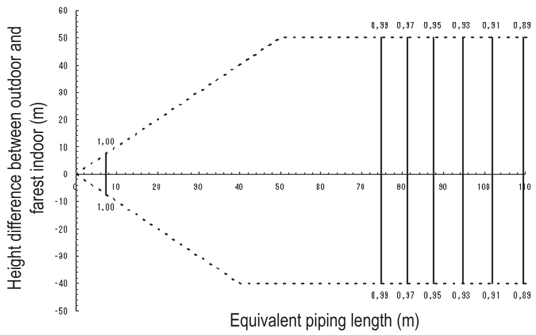
3 - 4 VRV®III heat pump small footprint combination

RXYQ48P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ48P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor
4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ48P9	41.3	22.2

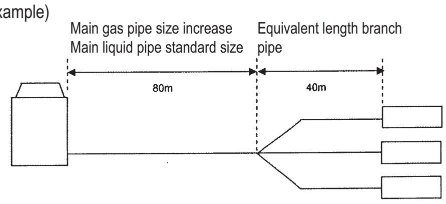
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size
When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

(example)



In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

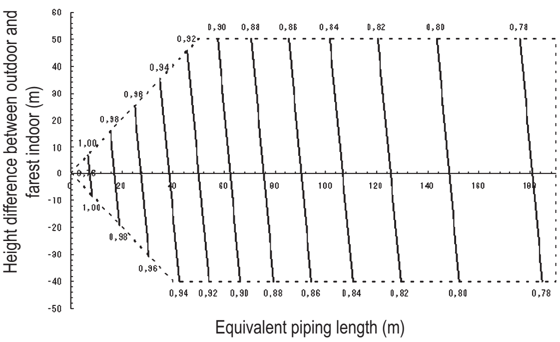
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.83
heating capacity when height difference = 0 is thus approximately 0.97

3 Capacity correction ratio

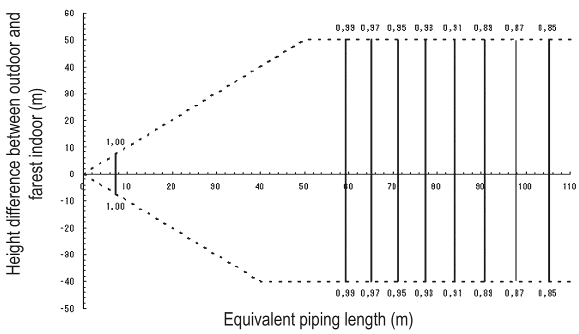
3 - 4 VRV®III heat pump small footprint combination

RXYQ50P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ50P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ50P9	41.3	22.2

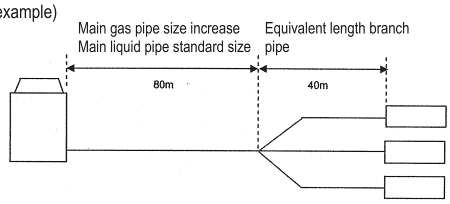
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

(example)



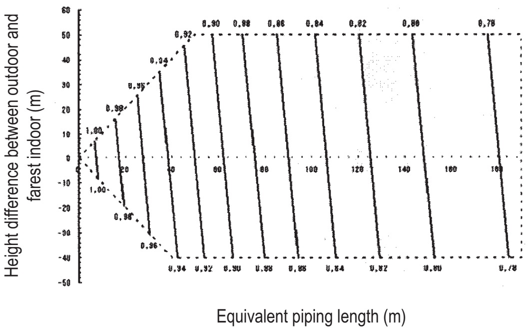
In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.83
heating capacity when height difference = 0 is thus approximately 0.92

3 Capacity correction ratio

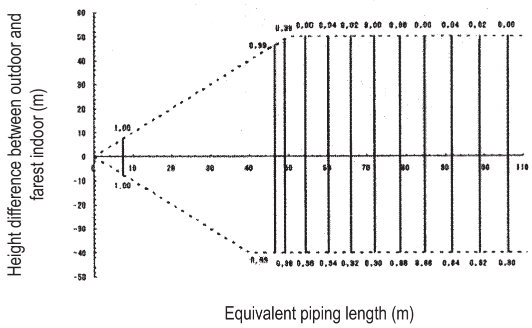
3 - 4 VRV®III heat pump small footprint combination

RXYQ52P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ52P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ52P9	41.3	22.2

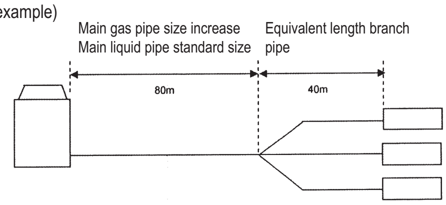
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

(example)



In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

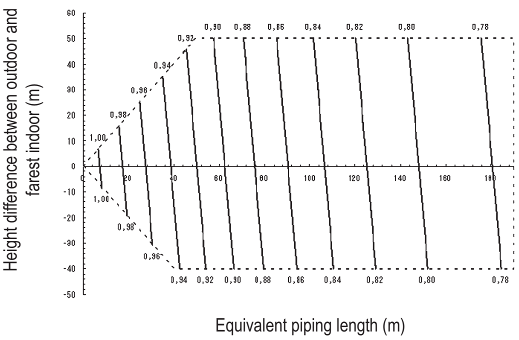
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.83
heating capacity when height difference = 0 is thus approximately 0.88

3 Capacity correction ratio

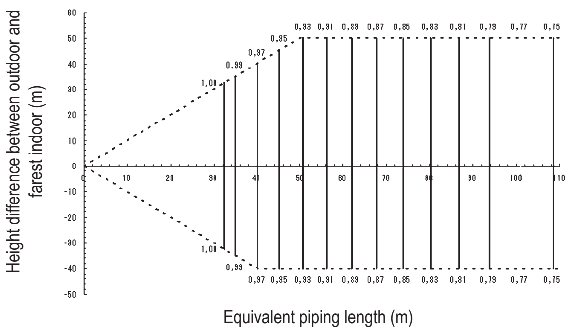
3 - 4 VRV®III heat pump small footprint combination

RXYQ54P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXYQ54P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diamters, see below.

Model	Gas pipe	Liquid pipe
RXYQ54P9	41.3	22.2

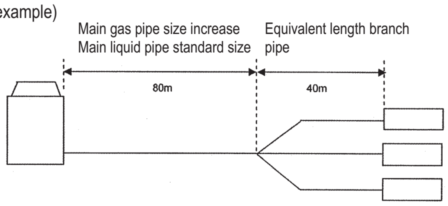
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length =(Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

   (example)



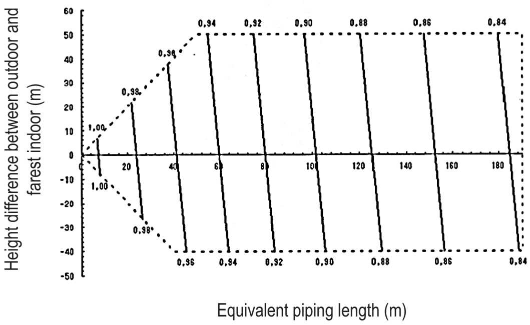
In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The rate of change in cooling capacity when height difference = 0 is thus approximately 0.83
heating capacity when height difference = 0 is thus approximately 0.83

3 Capacity correction ratio

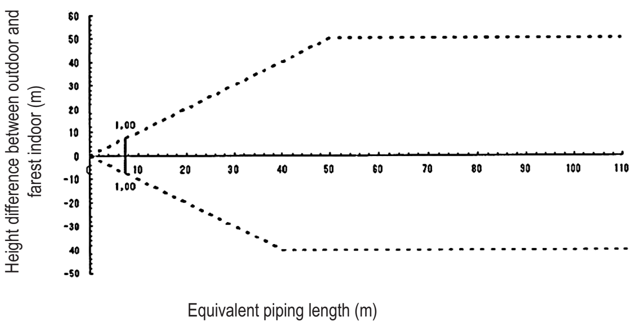
3 - 5 VRV®III heat pump high COP combination

RXYHQ12,24,36P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



Diameter of the main pipes (standard size)

Model	Gas pipe	Liquid pipe
RXYHQ12P9	28.6	12.7
RXYHQ24P9	34.9	15.9
RXYHQ36P9	41.3	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased.
   For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXYHQ12P9	28.6	15.9
RXYHQ24P9	34.9	19.1
RXYHQ36P9	41.3	22.2

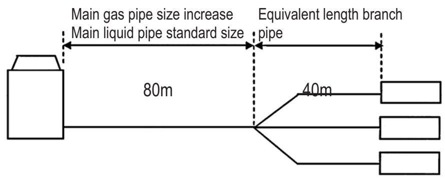
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length:

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. When cooling capacity is calculated: gas pipe size
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

Example



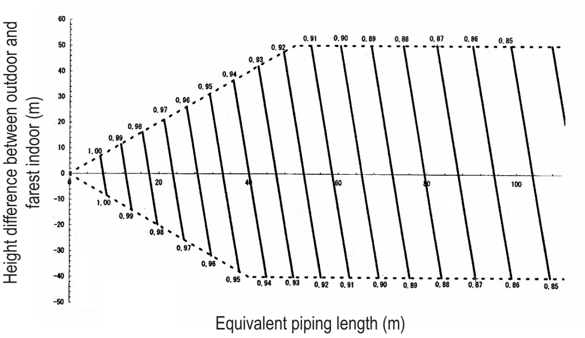
In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

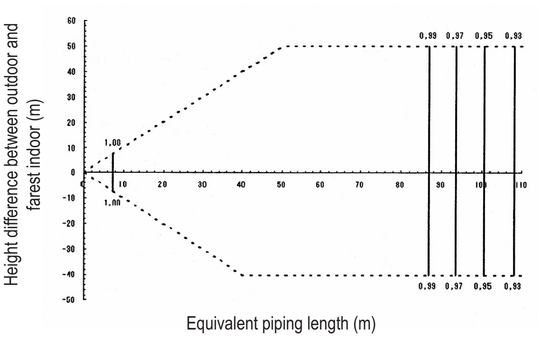
The rate of change in: cooling capacity when height difference = 0 is thus approximately 0.89
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

3 - 5 VRV®III heat pump high COP combination

RXYHQ16P9





Diameter of the main pipes (standard size)

Model	Gas pipe	Liquid pipe
RXYHQ16P9	28.6	12.7

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXYHQ16P9	31.8*	15.9

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

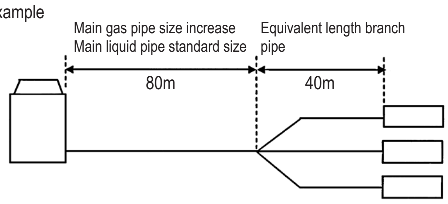
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length:

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table.
   - When cooling capacity is calculated: gas pipe size
   - When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

Example



In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

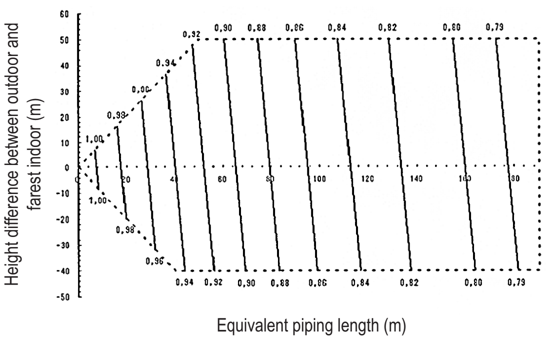
The rate of change in: cooling capacity when height difference = 0 is thus approximately 0.88
heating capacity when height difference = 0 is thus approximately 0.99

3 Capacity correction ratio

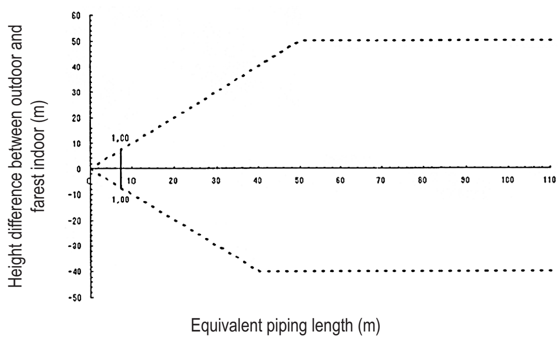
3 - 5 VRV®III heat pump high COP combination

RXYHQ18,26-30P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



Diameter of the main pipes (standard size)

Model	Gas pipe	Liquid pipe
RXYHQ18P9	28.6	15.9
RXYHQ26-30P9	34.9	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased.
   For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXYHQ18P9	31.8*	19.1
RXYHQ26-30P9	38.1*	22.2

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

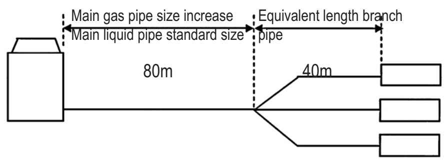
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length:

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. When cooling capacity is calculated: gas pipe size
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

Example



In the above case (Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

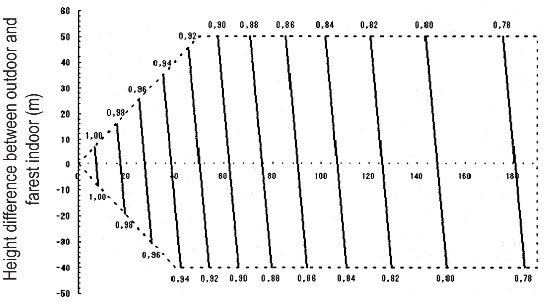
The rate of change in: cooling capacity when height difference = 0 is thus approximately 0.83
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

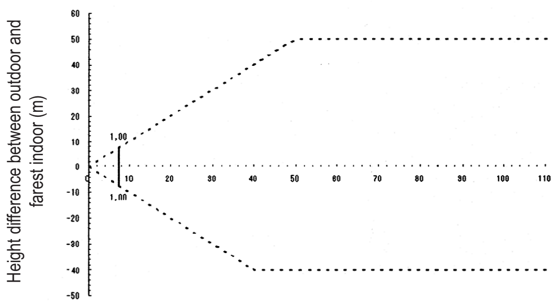
3 - 5 VRV®III heat pump high COP combination

RXYHQ20,32,34P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



Diameter of the main pipes (standard size)

Model	Gas pipe	Liquid pipe
RXYHQ20P9	28.6	15.9
RXYHQ32-34P9	34.9	19.1

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased.
   For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXYHQ20P9	31.8*	19.1
RXYHQ32-34P9	38.1*	22.2

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

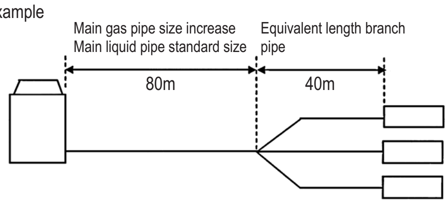
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length:

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table.
   - When cooling capacity is calculated: gas pipe size
   - When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

Example



In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

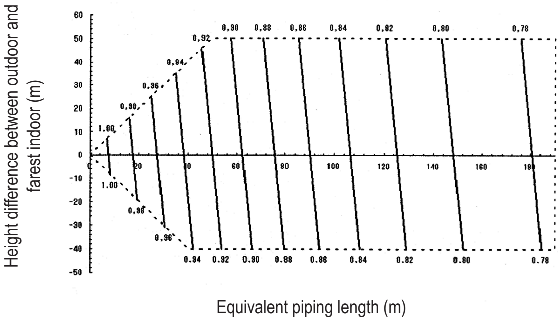
The rate of change in: cooling capacity when height difference = 0 is thus approximately 0.88
heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

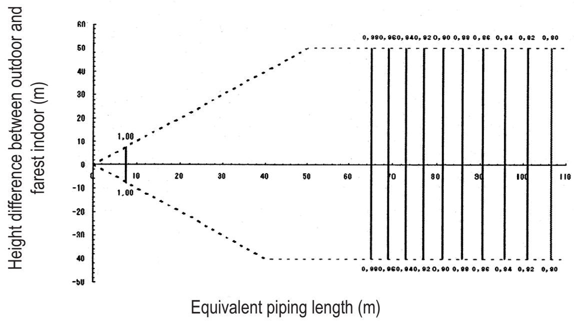
3 - 5 VRV®III heat pump high COP combination

RXYHQ22P9

Correction ratio for cooling capacity



Correction ratio for heating capacity



Diameter of the main pipes (standard size)

Model	Gas pipe	Liquid pipe
RXYHQ22P9	28.6	15.9

3TW31472-1A

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXYHQ22P9	31.8*	19.1

   * If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

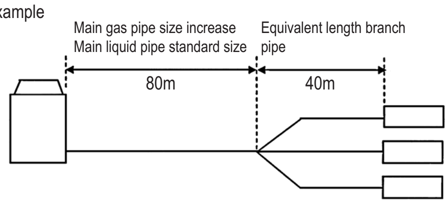
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length:

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table. [When cooling capacity is calculated: gas pipe size / When heating capacity is calculated: liquid pipe size]

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

   Example



   In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
   (Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

   The rate of change in: cooling capacity when height difference = 0 is thus approximately 0.88
   heating capacity when height difference = 0 is thus approximately 1.0

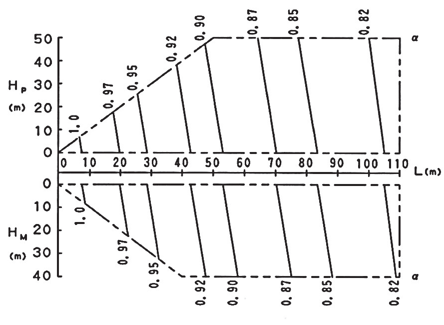
2
3

3 Capacity correction ratio

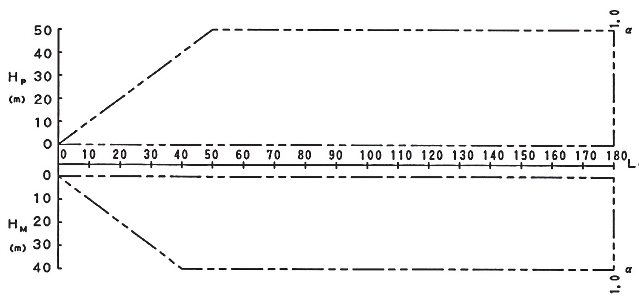
3 - 6 VRV®III-S

RXYSQ6P8V1

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Explanation of symbols]

Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position

Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

[Diameter of pipes]

Model	Gas	Liquid
RXYSQ6P8V1	ø 19.1	ø 9.5

3TW33642-4

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating cooling/heating capacity (max. capacity for combination with standard indoor unit)

   cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change

   In the case lenght of piping differs depending on the indoor unit, maximum capacity of aech unit during simultaneous operation is:

   cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

   <As for RXYMQ6MV4A - RXYSQ6M7V3B - RXYMQ6MVLT - RXYMQ6PV4A - RXYMQ6PVE - RXMQ6PVE - RXYSQ6P7V3B - RXYSQ6P7Y1B - RXYSQ6PA7V1B - RXYSQ6PA7Y1B - RXYSQ6P8V1B - RXYSQ6P8Y1B>
4. When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased.

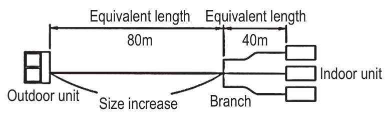
   [Diameter of above case]

Model	Gas	Liquid
RXYSQ6P8V1B	ø 22.2	Not increased

5. When the main sections of the interunit gas pip diameters are increased the overall equivalent length should be calculated as follows.

   Overall equivalent length = Equivalent length to main pipe x 0,5 + Equivalent length after branching

   Example: RXYSQ6P8V1B

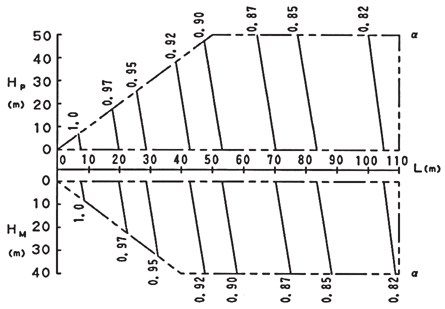
   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp = 0m is thus approximately 0.86
6. For RXYSQ: use these correction factors in case of VRV indoor unit.

3 Capacity correction ratio

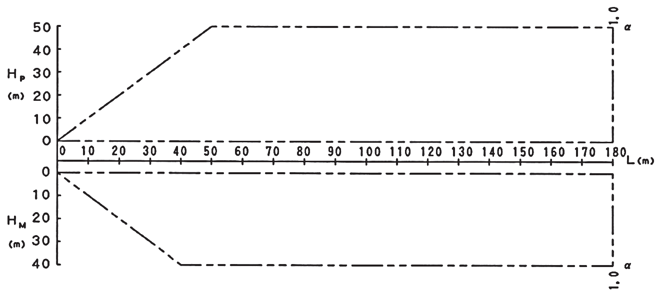
3 - 6 VRV®III-S

RXYSQ6P8Y1

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Explanation of symbols]
Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position
Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position
L: Equivalent pipe length (m)
α: Capacity correction factor

[Diameter of pipes]

Model	Gas	Liquid
RXYSQ6P8Y1	ø 19.1	ø 9.5

3TW33642-4

NOTES

1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating cooling/heating capacity (max. capacity for combination with standard indoor unit)

   cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change

   In the case lenght of piping differs depending on the indoor unit, maximum capacity of aech unit during simultaneous operation is:

   cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

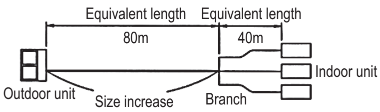
   <As for RXYMQ6MV4A - RXYSQ6M7V3B - RXYMQ6MVLT - RXYMQ6PV4A, RXMQ6PVE - RXMQ6VPE - RXYSQ6P7V3B - RXYSQ6P7Y1B - RXYSQ6PA7V1B - RXYSQPA7Y1B - RXYSQ6P8V1B - RXYSQ6P8Y1B>
4. When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Gas	Liquid
RXYSQ6P8Y1B	ø 22.2	Not increased

5. When the main sections of the interunit gas pip diameters are increased the overall equivalent length should be calculated as follows.

   Overall equivalent length = Equivalent length to main pipe x 0,5 + Equivalent length after branching

   Example: RXYSQ6P8Y1B



   In the above case (Cooling)
   Overall equivalent length = 80m x 0.5 + 40m = 80m
   The correction factor in capacity when Hp = 0m is thus approximately 0.86

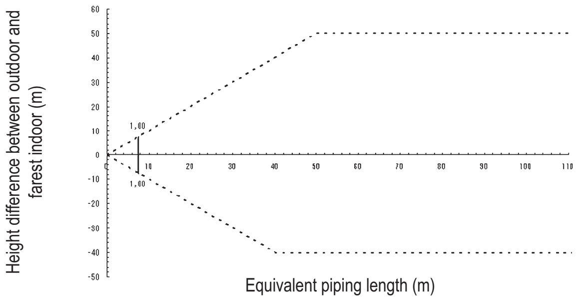
6. For RXYSQ: use these correction factors in case of vrv indoor unit.

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ8P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ8P9	19.1	9.5

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor
4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ8P9	22.2	12.7

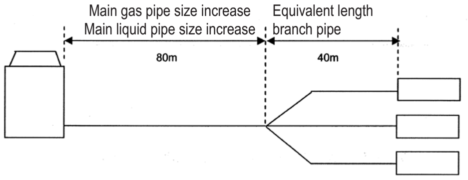
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

Choose the correction factor from the following table.
When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

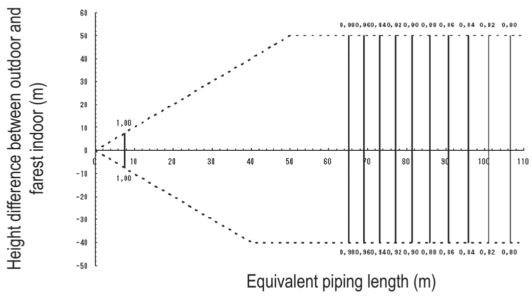
The rate of change in heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ10P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ10P9	22.2	9.5

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ10P9	25.4*	12.7

   * If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

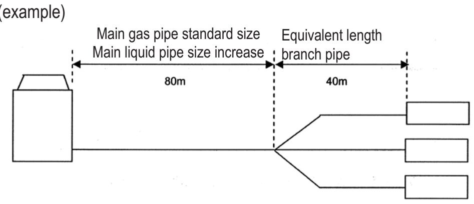
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

   (example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

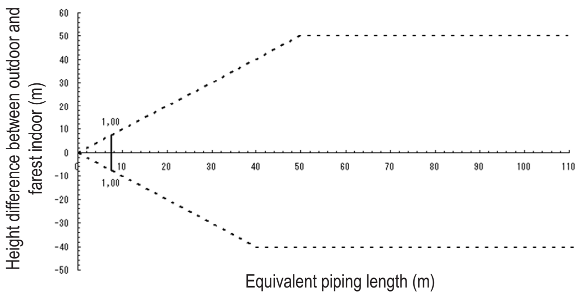
The rate of change in heating capacity when height difference = 0 is thus approximately 0.90

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ12,14,24,36P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ12P9	28.6	12.7
RXHQ14P9	28.6	12.7
RXHQ24P9	34.9	15.9
RXHQ36P9	41.3	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased.
   For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ12P9	28.6	15.9
RXHQ14P9	28.6	15.9
RXHQ24P9	34.9	19.1
RXHQ36P9	41.3	22.2

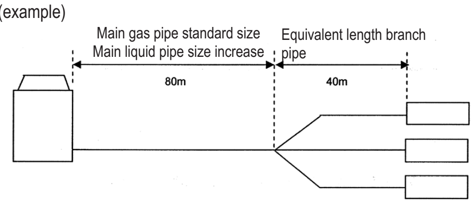
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Overall Equivalent length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

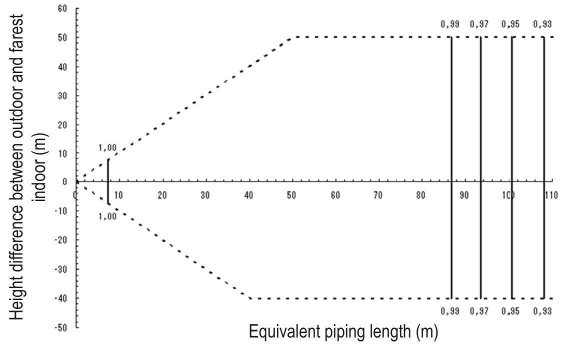
The rate of change in heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ16P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ16P9	28.6	12.7

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ16P9	31.8*	15.9

   * If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

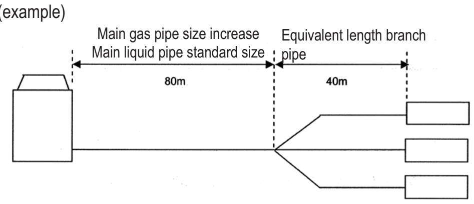
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

   (example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

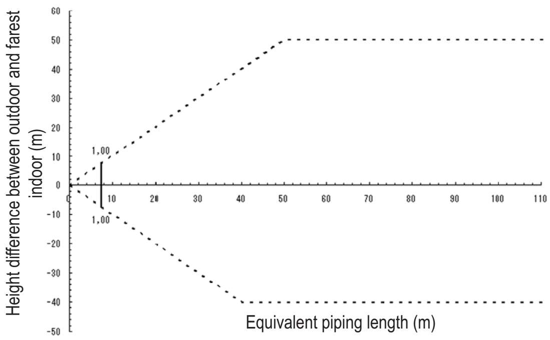
The rate of change in heating capacity when height difference = 0 is thus approximately 0.99

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ18,26-30,38-44P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ18P9	28.6	15.9
RXHQ26-30P9	34.9	19.1
RXHQ38-44P9	41.3	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ18P9	31.8*	19.1
RXHQ26-30P9	38.1*	22.2
RXHQ38-44P9	41.3	22.2

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

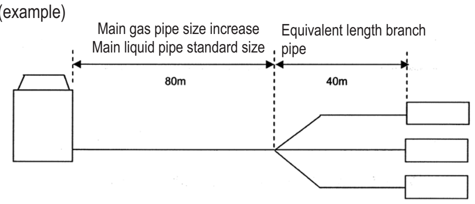
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

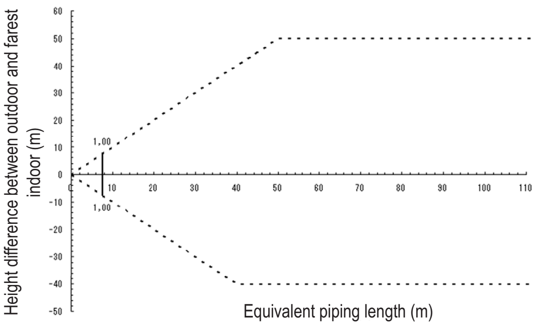
The rate of change in heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ20,32,34P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ20P9	28.6	15.9
RXHQ32-34P9	34.9	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ20P9	31.8*	19.1
RXHQ32-34P9	38.1*	22.2

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

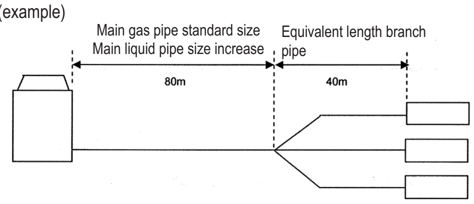
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

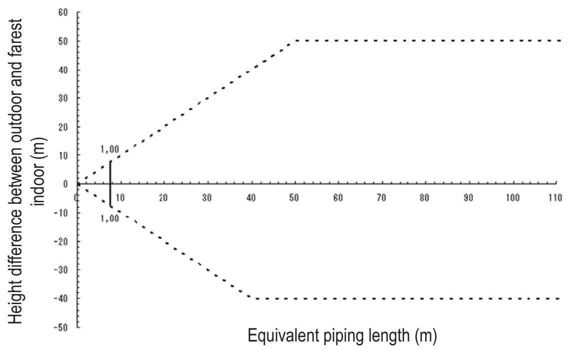
The rate of change in heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ22P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ22P9	28.6	15.9

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
- Condition: Indoor connection ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

- Condition: Indoor unit connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ22P9	31.8*	19.1

* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

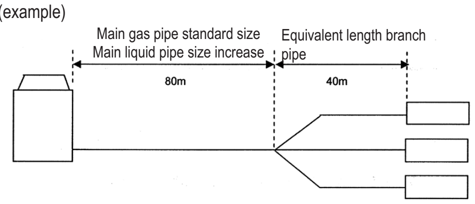
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Overall Equivalent length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

Choose the correction factor from the following table.
When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

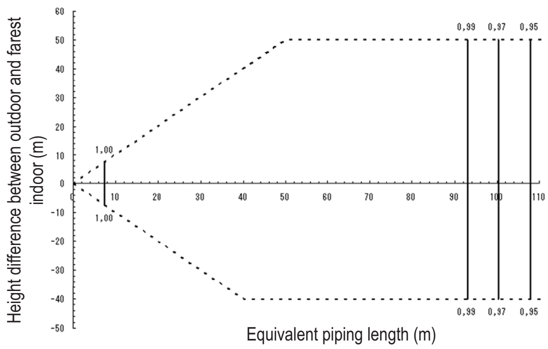
The rate of change in heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ46P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ46P9	41.3	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ46P9	41.3	22.2

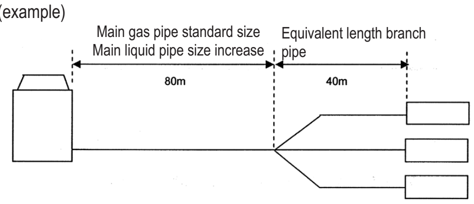
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

   (example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

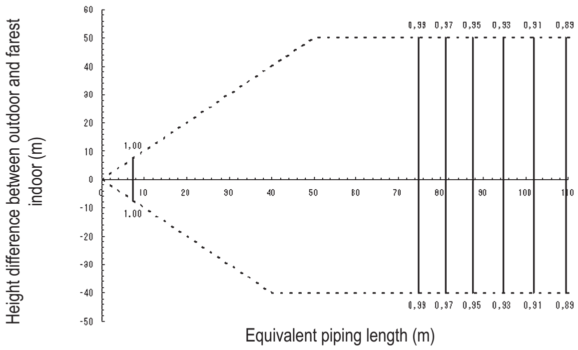
The rate of change in heating capacity when height difference = 0 is thus approximately 1.0

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ48P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ48P9	41.3	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ48P9	41.3	22.2

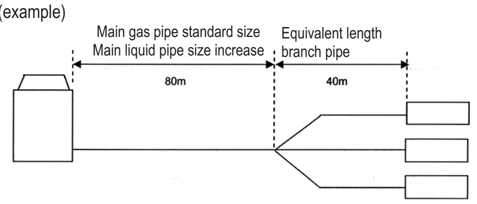
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

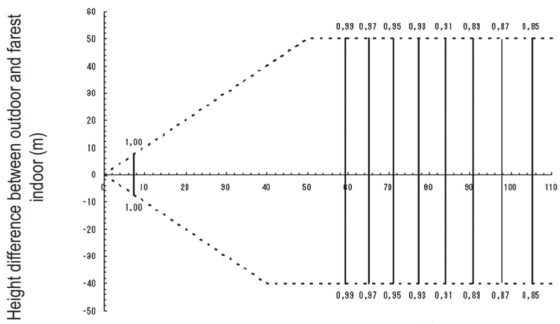
The rate of change in heating capacity when height difference = 0 is thus approximately 0.97

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ50P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ50P9	41.3	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at 100% connection ratio
	x	Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

Maximum capacity of outdoor units	=	Capacity of outdoor units from capacity table at installed connection ratio
	x	Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ50P9	41.3	22.2

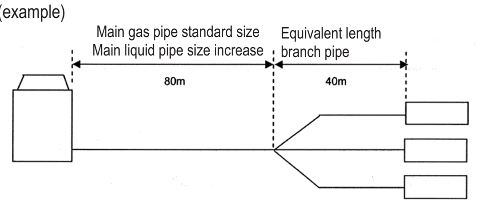
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

Equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

Choose the correction factor from the following table.
When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

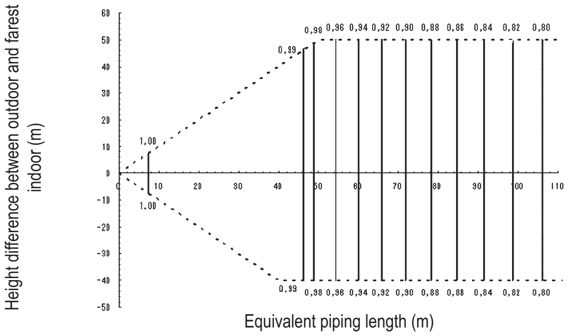
The rate of change in heating capacity when height difference = 0 is thus approximately 0.92

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ52P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ52P9	41.3	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor connection ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio x Correction ratio of piping to farest indoor

   - Condition: Indoor connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio x Correction ratio of piping to farest indoor

4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ52P9	41.3	22.2

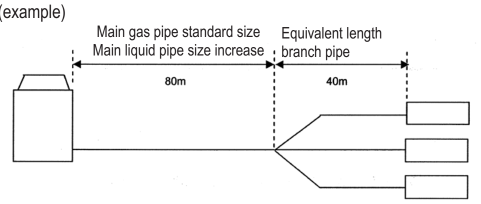
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length of branch pipes

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

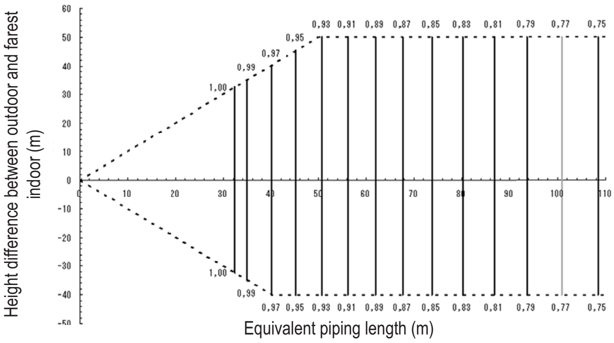
The rate of change in heating capacity when height difference = 0 is thus approximately 0.88

3 Capacity correction ratio

3 - 7 VRV®III heating only

RXHQ54P9

Correction ratio for heating capacity



[Diameter of the main pipes (standard size)]

Model	Gas pipe	Liquid pipe
RXHQ54P9	41.3	19.1

3TW33762-3

NOTES

1. These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation for the capacity correction ratio, shown in the above figures.
2. With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
3. Method of calculating the capacity of the outdoor units:
   The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
   - Condition: Indoor unit combination ratio does not exceed 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at 100% connection ratio
   x Correction ratio of piping to farest indoor

   - Condition: Indoor unit connection ratio exceeds 100%.

   Maximum capacity of outdoor units = Capacity of outdoor units from capacity table at installed connection ratio
   x Correction ratio of piping to farest indoor
4. When level difference is 50m or more and equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit - branch sections) must be increased. For new diameters, see below.

Model	Gas pipe	Liquid pipe
RXHQ54P9	41.3	22.2

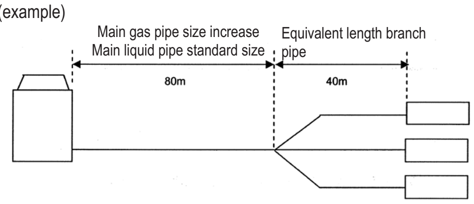
5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).
6. Equivalent length used in the above figures is based upon the following equivalent length.

   Equivalent piping length = (Equivalent length of main pipe) x Correction factor + (Equivalent length of branch pipes)

   Choose the correction factor from the following table.
   When heating capacity is calculated: liquid pipe size

	Correction factor	
	Standard size	Size increase
Heating (liquid pipe)	1.0	0.5

(example)



In the above case
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m

The rate of change in heating capacity when height difference = 0 is thus approximately 0.83

4 Integrated heating capacity coefficient

REYQ-P8/P9

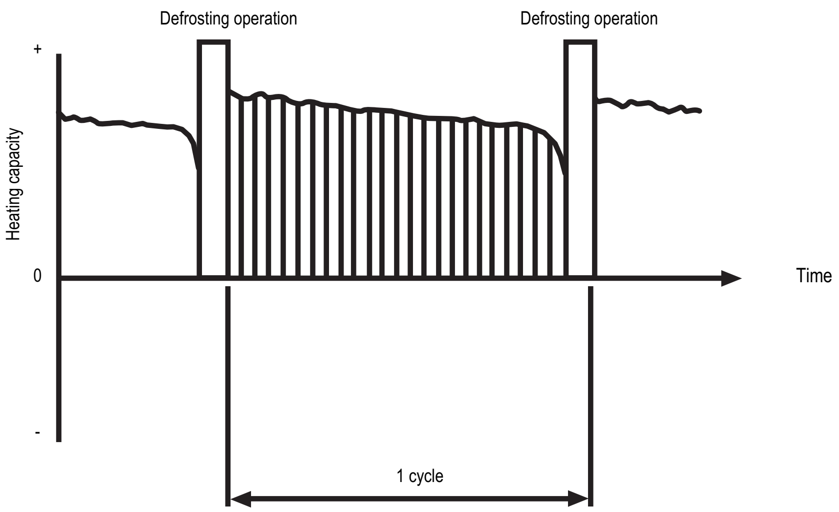
INTEGRATED HEATING CAPACITY COEFFICIENT

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress. The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:
Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrated correction factor for frost accumulation (kW) = C
A = B x C

Correction factor for finding integrated heating capacity

Inlet port temperature of heat exchanger (°C/RH 85%)		-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	REYQ8,10,12P	0.97	0.95	0.90	0.86	0.87	0.92	1.0
	REYQ14,16P	0.96	0.94	0.89	0.85	0.86	0.91	1.0
	REYQ18-32P	0.99	0.97	0.92	0.88	0.89	0.94	1.0
	REYQ34-48P	0.98	0.96	0.91	0.87	0.88	0.93	1.0



3TW30322-3A

NOTE

1 The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms or time.

Please note that, when there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, there will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative humidity (RH) and the amount of frosting which occurs.

4 Integrated heating capacity coefficient

REYHQ-P

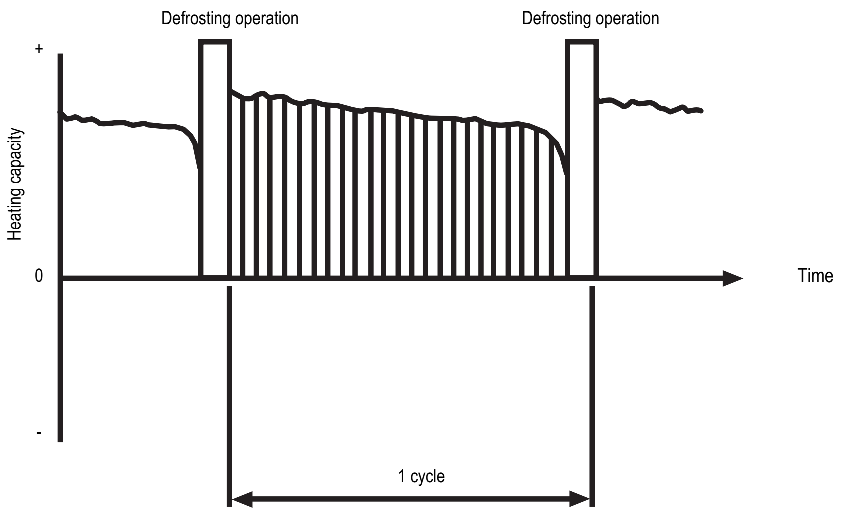
INTEGRATED HEATING CAPACITY COEFFICIENT

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress. The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:
Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrated correction factor for frost accumulation (kW) = C
A = B x C

Correction factor for finding integrated heating capacity

Inlet port temperature of heat exchanger (°C/RH 85%)		-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	REYHQ16,20-24P	0.99	0.97	0.92	0.88	0.89	0.94	1.0



3TW30322-3A

NOTE

1 The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms or time.

Please note that, when there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, there will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative humidity (RH) and the amount of frosting which occurs.

4 Integrated heating capacity coefficient

RXYQ5-54P9

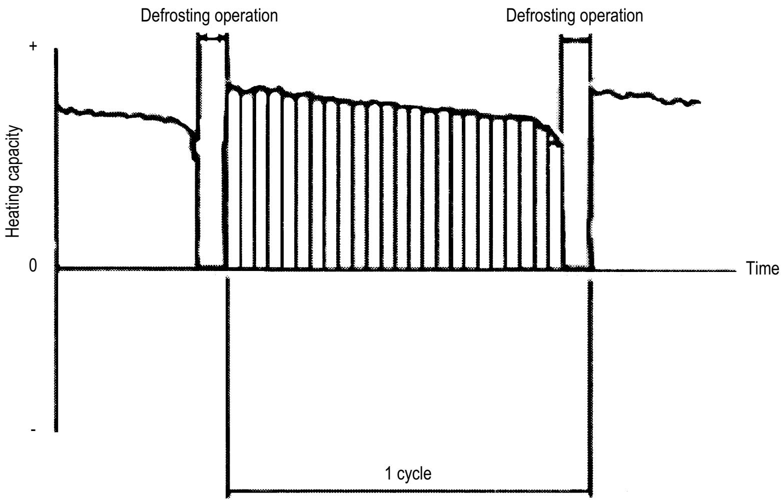
INTEGRATED HEATING CAPACITY COEFFICIENT

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress. The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:
Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrating correction factor for frost accumulation (kW) = C
A = B x C

Correction factor for finding integrated heating capacity

Inlet port temperature of heat exchanger (°C/RH 85%)	-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	0.96	0.93	0.87	0.81	0.83	0.89	1.0



3TW27232-7

NOTE

1 The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms or time.

Please note that, when there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, there will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative humidity (RH) and the amount of frosting which occurs.

4 Integrated heating capacity coefficient

RXYHQ12-36P9

INTEGRATED HEATING CAPACITY COEFFICIENT

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress. The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:

Integrated heating capacity = A

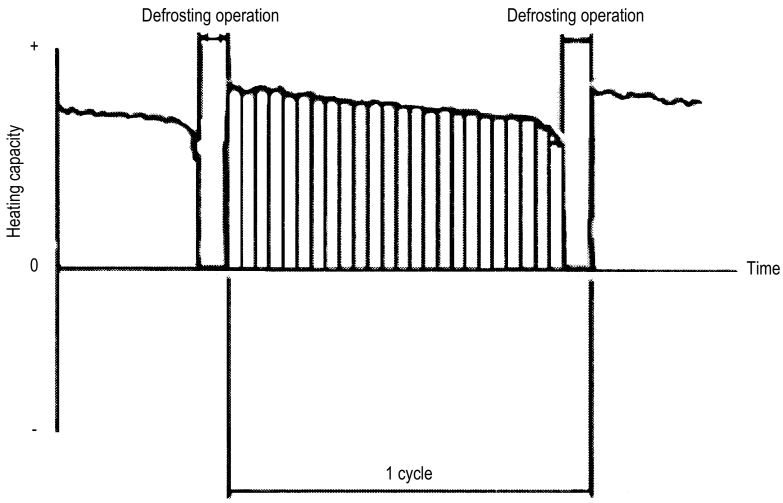
Value given in table of capacity characteristics = B

Integrating correction factor for frost accumulation (kW) = C

A = B x C

Correction factor for finding integrated heating capacity

Inlet port temperature of heat exchanger (°C/RH 85%)	-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	0.96	0.93	0.87	0.81	0.83	0.89	1.0



3TW27232-7

NOTE

1 The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms or time.

Please note that, when there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, there will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative humidity (RH) and the amount of frosting which occurs.

4 Integrated heating capacity coefficient

RXHQ-P9

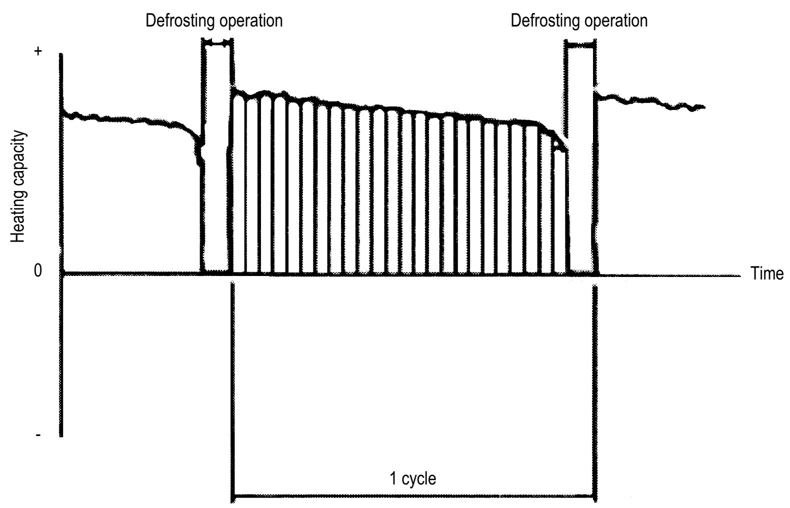
INTEGRATED HEATING CAPACITY COEFFICIENT

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress. The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:
Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrating correction factor for frost accumulation (kW) = C
A = B x C

Correction factor for finding integrated heating capacity

Inlet port temperature of heat exchanger (°C/RH 85%)	-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	0.96	0.93	0.87	0.81	0.83	0.89	1.0



3TW27232-7

NOTE

1 The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms or time.

Please note that, when there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, there will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative humidity (RH) and the amount of frosting which occurs.

4 Integrated heating capacity coefficient

RXYSQ-P8V1

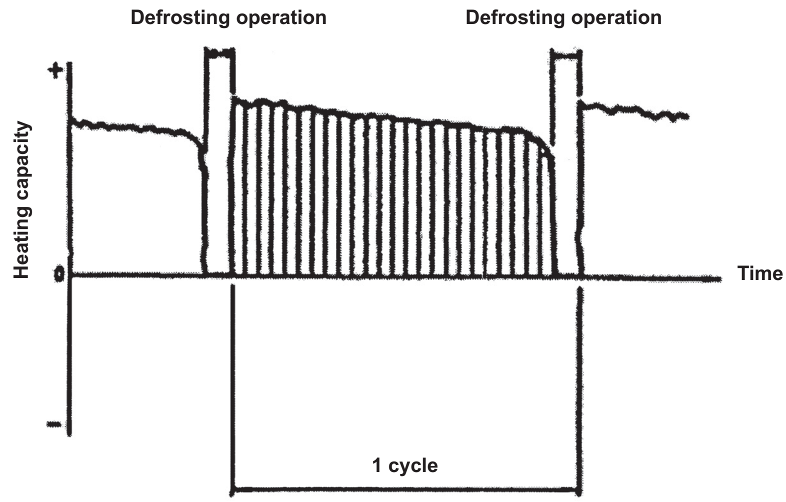
INTEGRATED HEATING CAPACITY COEFFICIENT

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress.
The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:
Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrating correction factor for frost accumulation (kW) = C
A = B x C

Correction factor for finding integrated heating capacity.

Inlet port temperature of heat exchanger (°C/RH 85%)	-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	0,88	0,86	0,8	0,75	0,76	0,82	1.0



3TW30402

NOTES

1. The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms or time.
2. Whe there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, ther will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative huminity (RH) and the amount of frosting which occurs.

4 Integrated heating capacity coefficient

RXYSQ-P8Y1

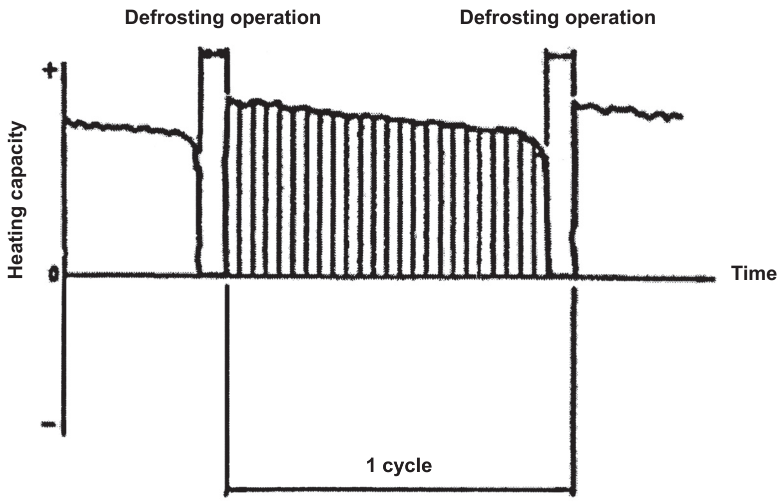
INTEGRATED HEATING CAPACITY COEFFICIENT

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress.
The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:
Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrating correction factor for frost accumulation (kW) = C
A = B x C

Correction factor for finding integrated heating capacity.

Inlet port temperature of heat exchanger (°C/RH 85%)	-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	0,88	0,86	0,8	0,75	0,76	0,82	1.0



3TW30402

NOTES

1. The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms or time.
2. Whe there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, ther will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative huminity (RH) and the amount of frosting which occurs.

4 Integrated heating capacity coefficient

RXYRQ-P

Integrated heating capacity coefficient

The heating capacity tables do not take account of the reduction in capacity, when frost has accumulated or while the defrosting operation is in progress.
The capacity values, which take these factors into account, in other words, the integrated heating capacity values, can be calculated as follows:

Formula:
Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrating correction factor for frost accumulation (kW) = C

$A = B \times C$

$C = C_1 \times C_2$

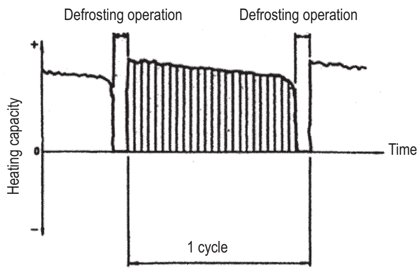
The correction factor C_1 can be found in the table below

Inlet port temperature of heat exchanger (°C/RH 85%)	-7	-5	-3	0	3	5	7
Correction factor C_1	0.95	0.93	0.88	0.84	0.85	0.90	1.0

$$C2 = 0.17 \times \left(\frac{VRV_{indoor}\ index}{\Sigma index\ all\ indoor\ units}\right) + 0.83$$

Example:
Outdoor temperature: -3°C
Total VRV indoor unit capacity index: 80
Total RA or Sky air indoor unit capacity index: 140

$$\left.\begin{array}{l} C_1 = 0.88 \\ C_2 = 0.17 \times \left(\frac{80}{140 + 80}\right) + 0.83 = 0.89 \end{array}\right\} C = 0.89 \times 0.88 = 0.78$$



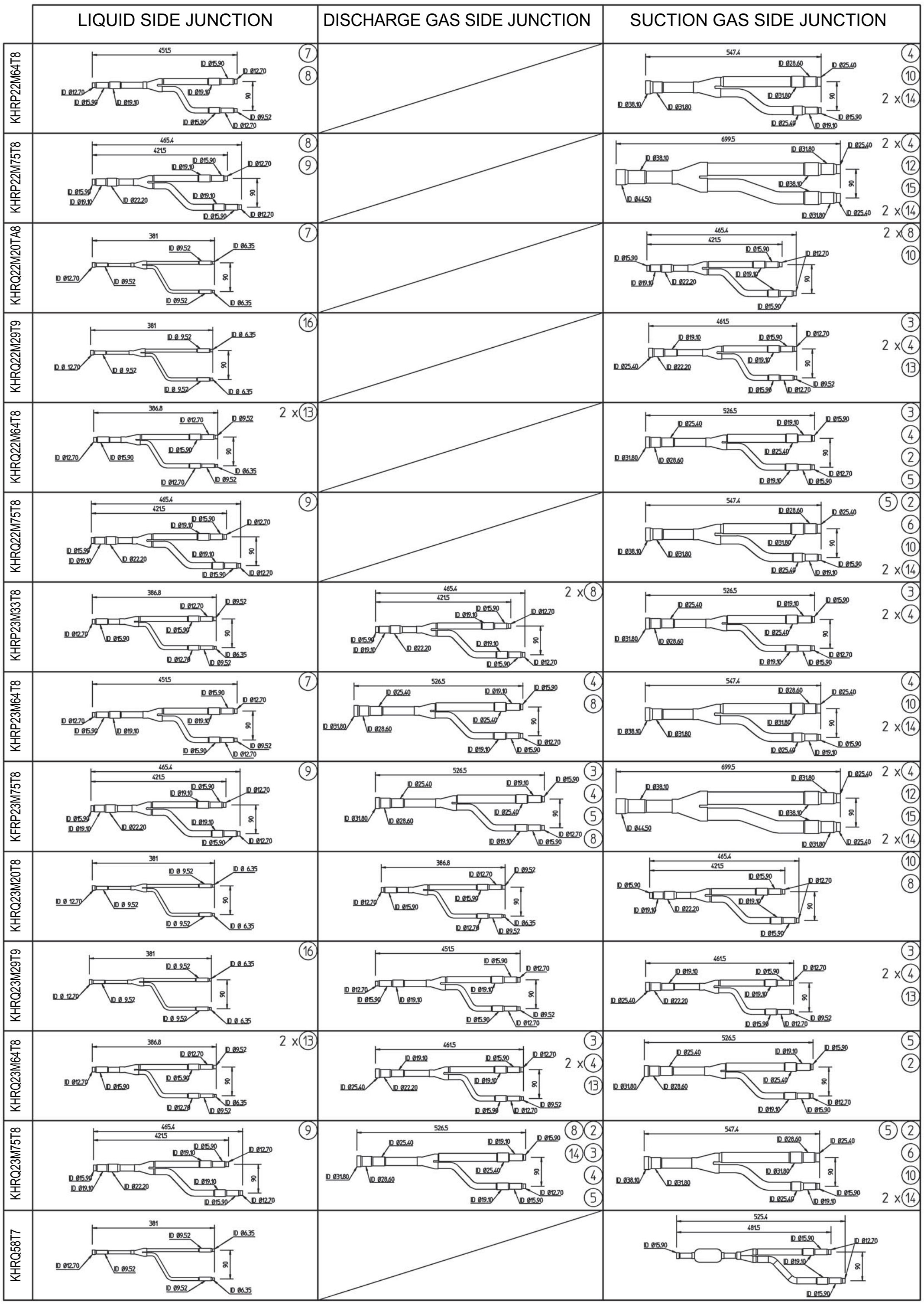
Please note that, when there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, there will always be a temporary reduction in capacity, although this will of course vary in degree in accordance with a number of other factors, such as the outdoor temperature (°CDB), relative humidity (RH) and the amount of frosting which occurs.

3TW33912-5

NOTE

The figure shows that the integrated heating capacity expresses the integrated capacity for a single cycle (from defrost operation to defrost operation) in terms of time.

5 Refnet pipe systems



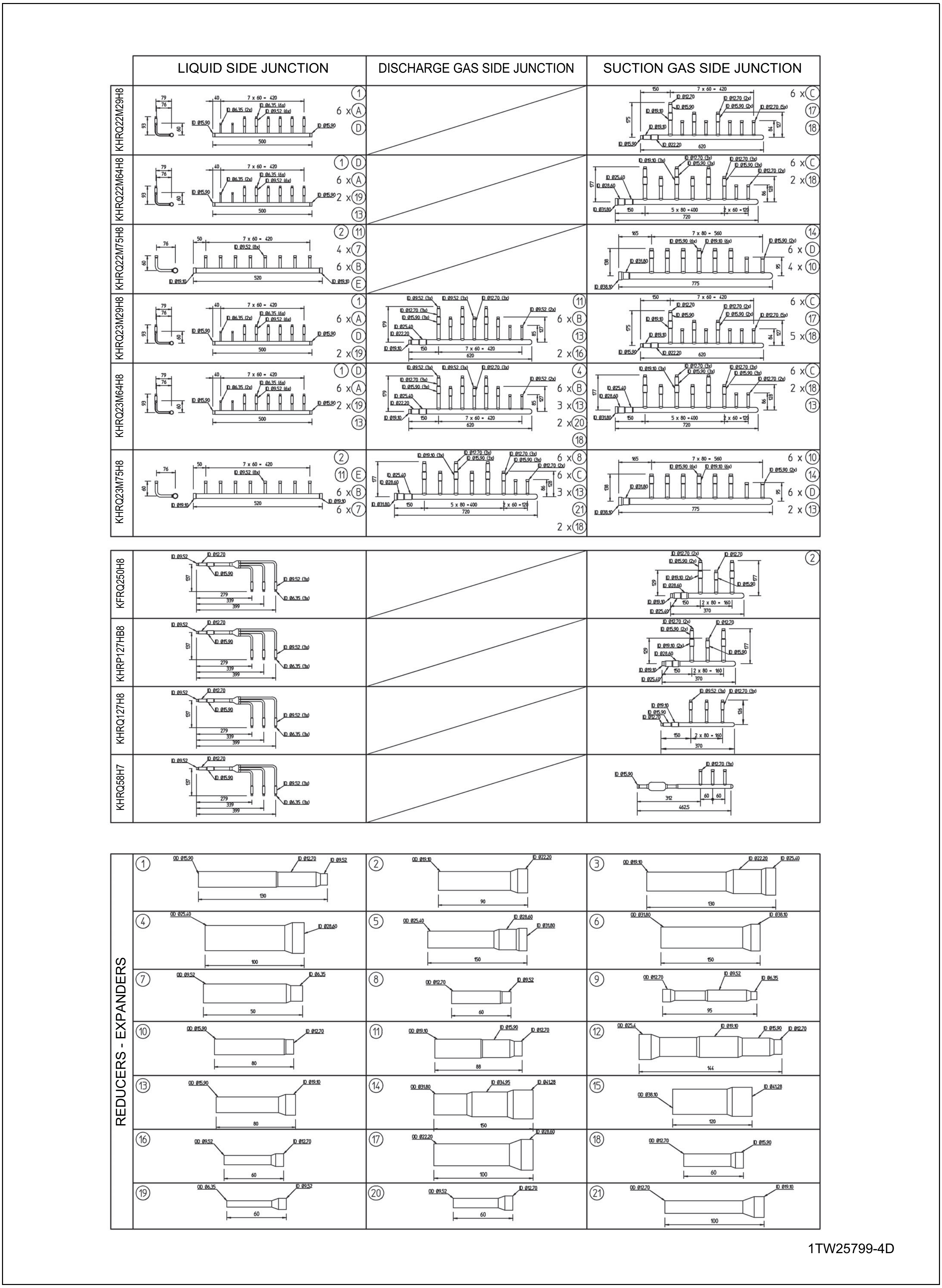
	LIQUID SIDE JUNCTION	DISCHARGE GAS SIDE JUNCTION	SUCTION GAS SIDE JUNCTION
KHRP22M64T8	(7) (8)	—	(4) (10) 2 x (14)
KHRP22M75T8	(8) (9)	—	2 x (4) (12) (15) 2 x (14)
KHRQ22M20TA8	(7)	—	2 x (8) (10)
KHRQ22M29T9	(16)	—	(3) 2 x (4) (13)
KHRQ22M64T8	2 x (13)	—	(3) (4) (2) (5)
KHRQ22M75T8	(9)	—	(5) (2) (6) (10) 2 x (14)
KHRP23M33T8		2 x (8)	(3) 2 x (4)
KHRP23M64T8	(7)	(4) (8)	(4) (10) 2 x (14)
KFRP23M75T8	(9)	(3) (4) (5) (8)	2 x (4) (12) (15) 2 x (14)
KHRQ23M20T8			(10) (8)
KHRQ23M29T9	(16)		(3) 2 x (4) (13)
KHRQ23M64T8	2 x (13)	(3) 2 x (4) (13)	(5) (2)
KHRQ23M75T8	(9)	(8) (2) (14) (3) (4) (5)	(5) (2) (6) (10) 2 x (14)
KHRQ58T7		—	

CLOSED PIPES

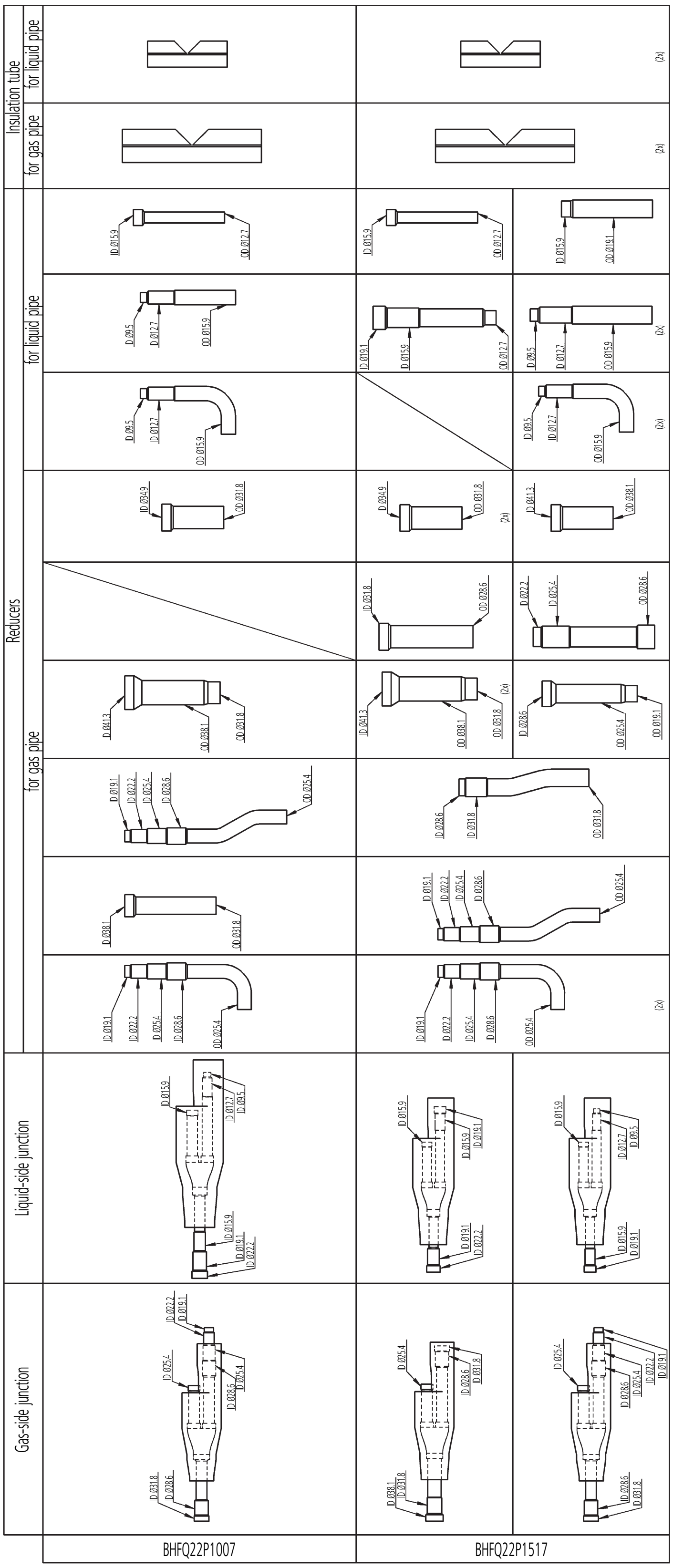
(A) OD Ø6.35, 60	(B) OD Ø9.52, 60	(C) OD Ø12.70, 80
(D) OD Ø15.90, 80	(E) OD Ø19.10, 80	

1TW25799-4D

5 Refnet pipe systems

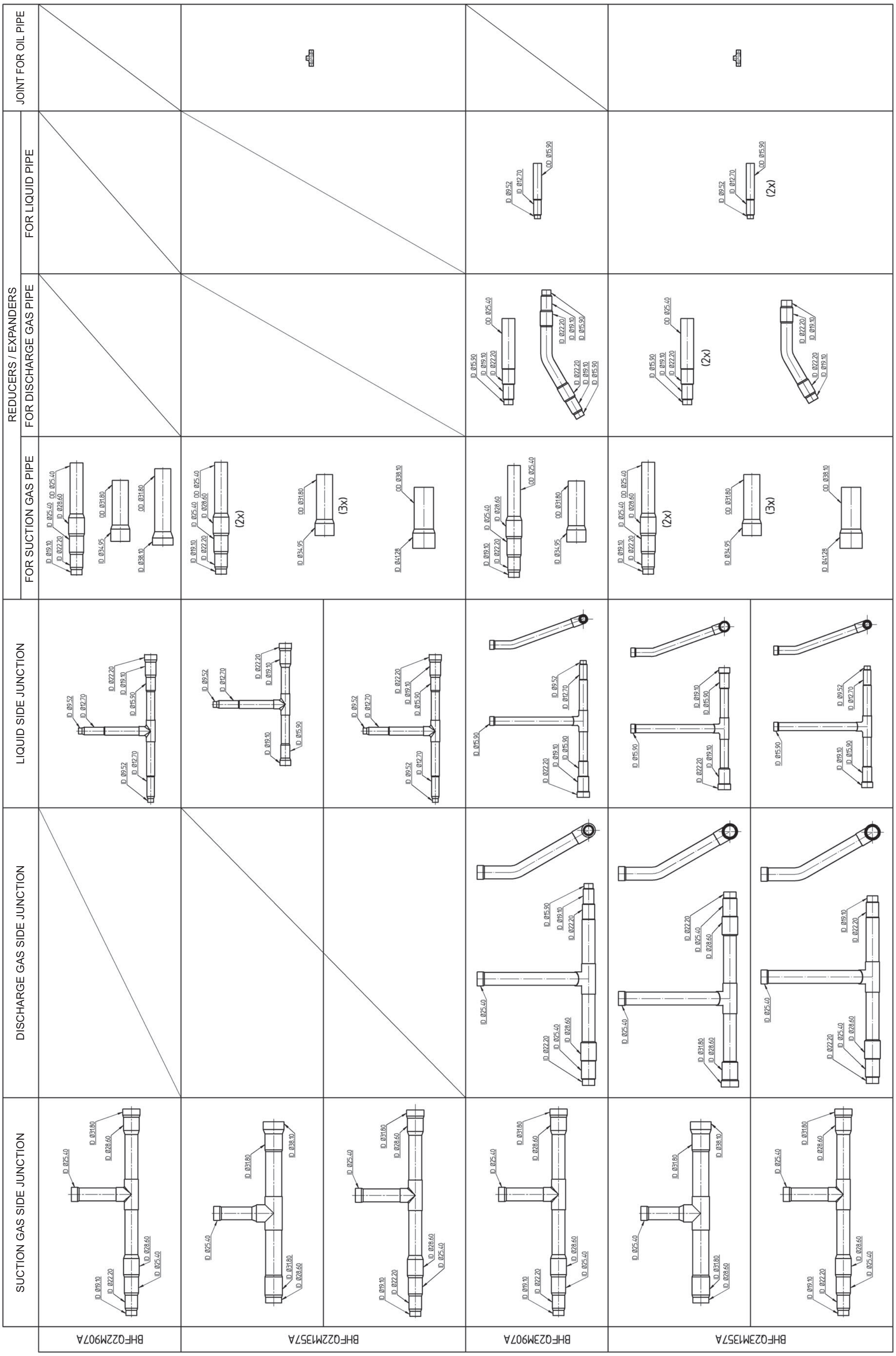


5 Refnet pipe systems



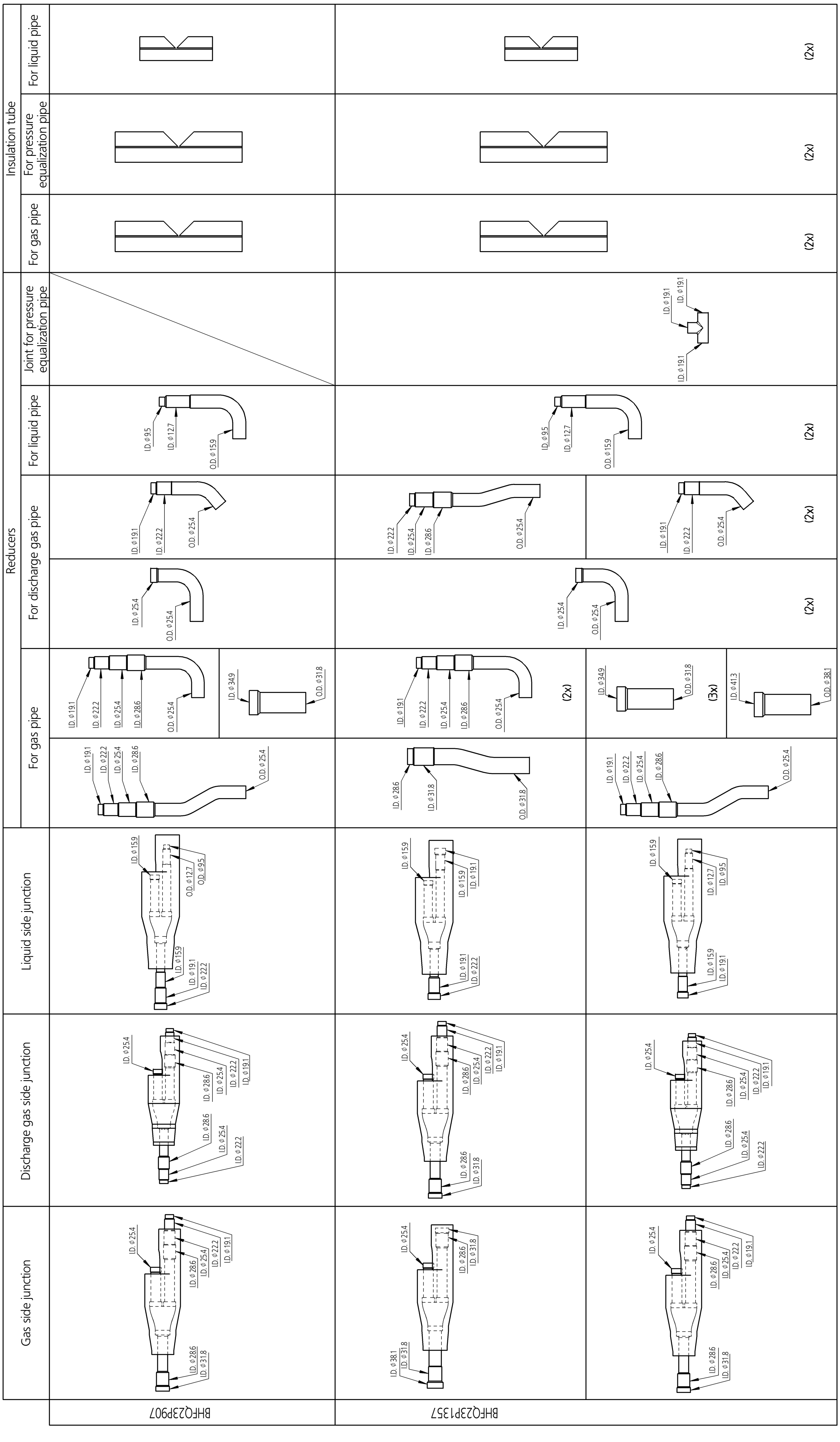
2TW27239-1

5 Refnet pipe systems



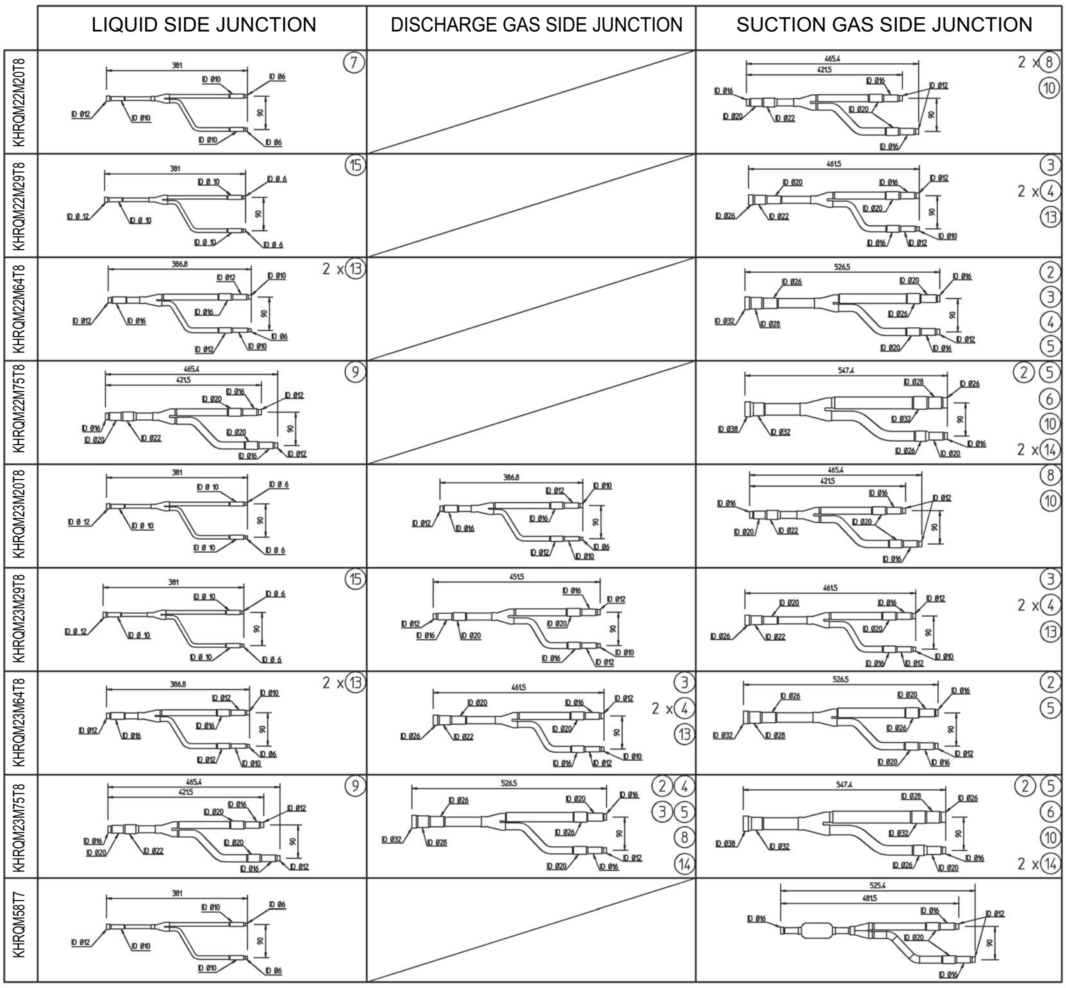
2TW25799-6

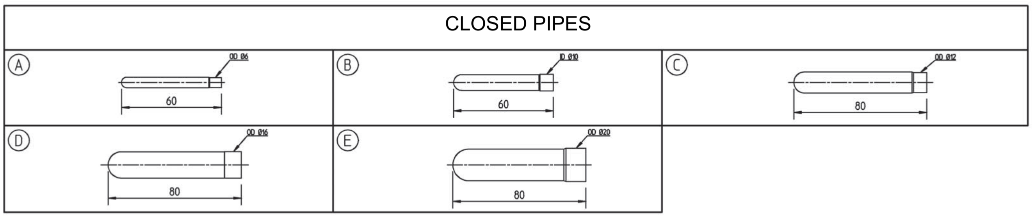
5 Refnet pipe systems



2TW29119-1

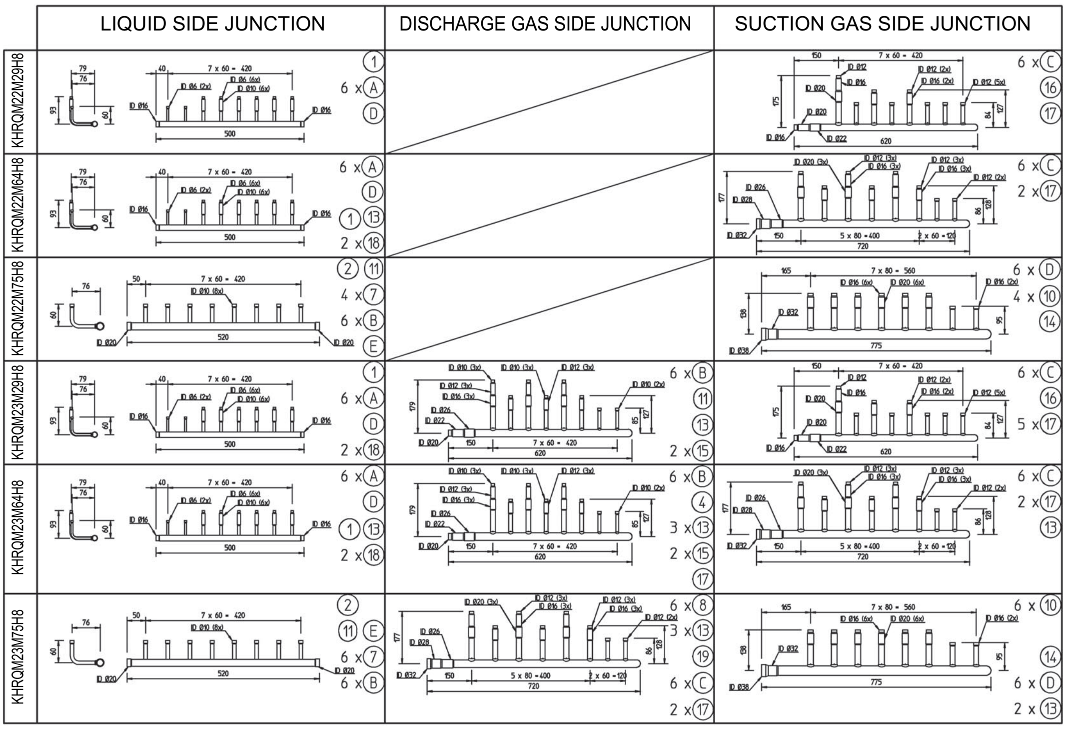
5 Refnet pipe systems

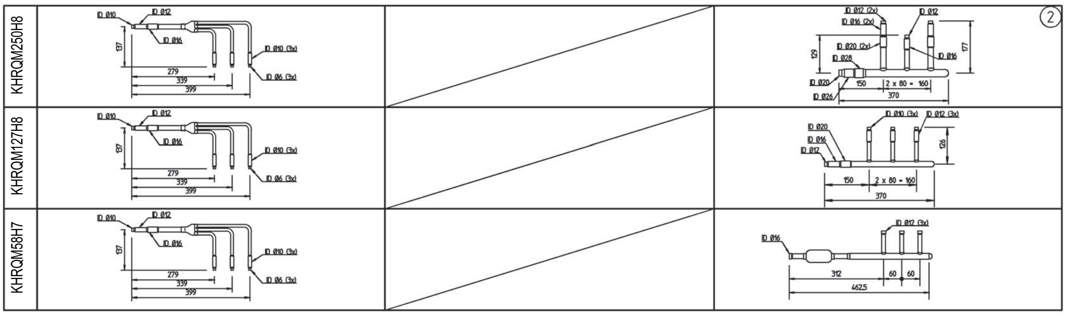


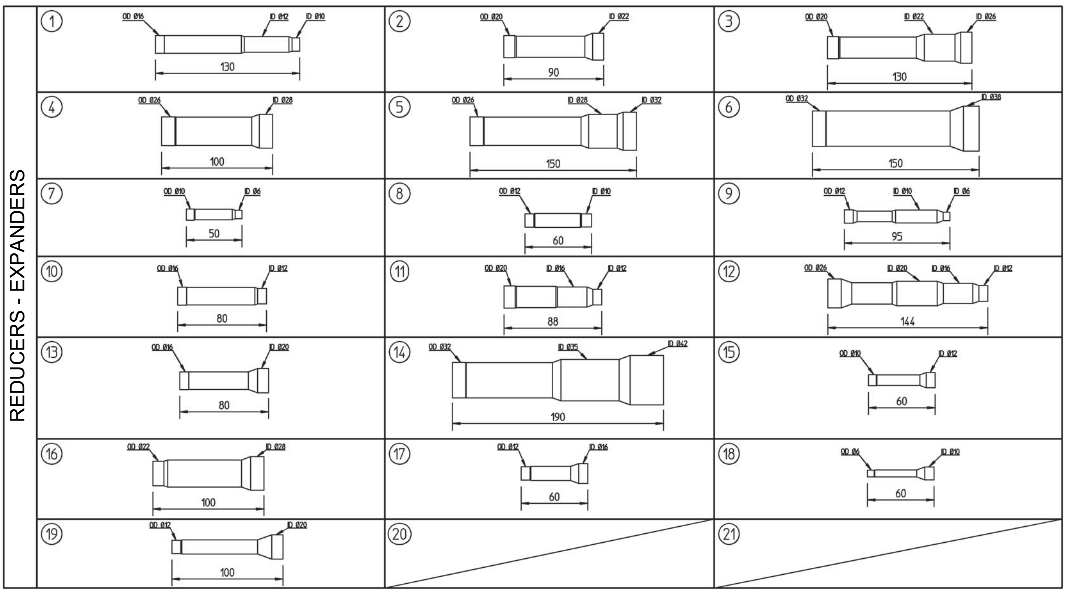


1TW29479-1A

5 Refnet pipe systems

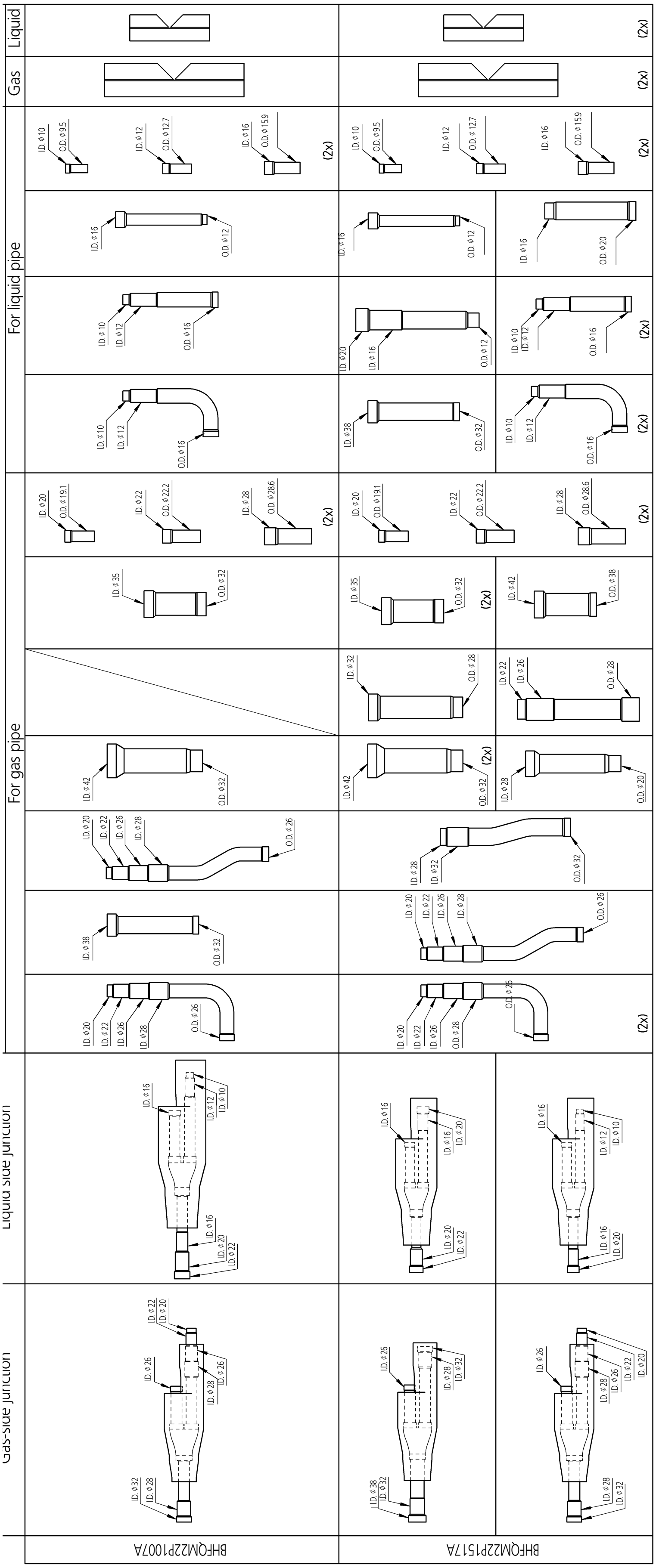






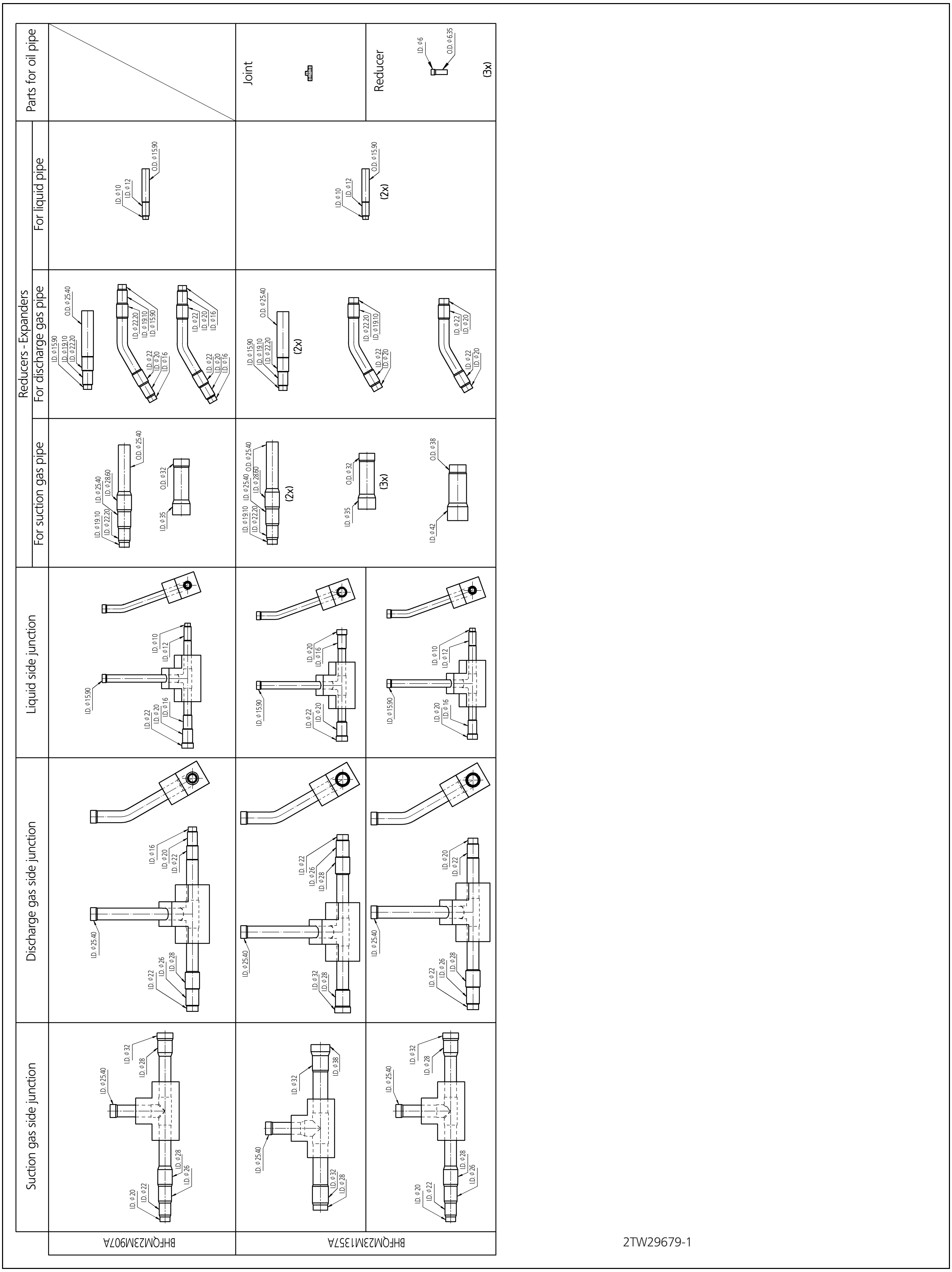
1TW29479-1A

Refnet pipe systems

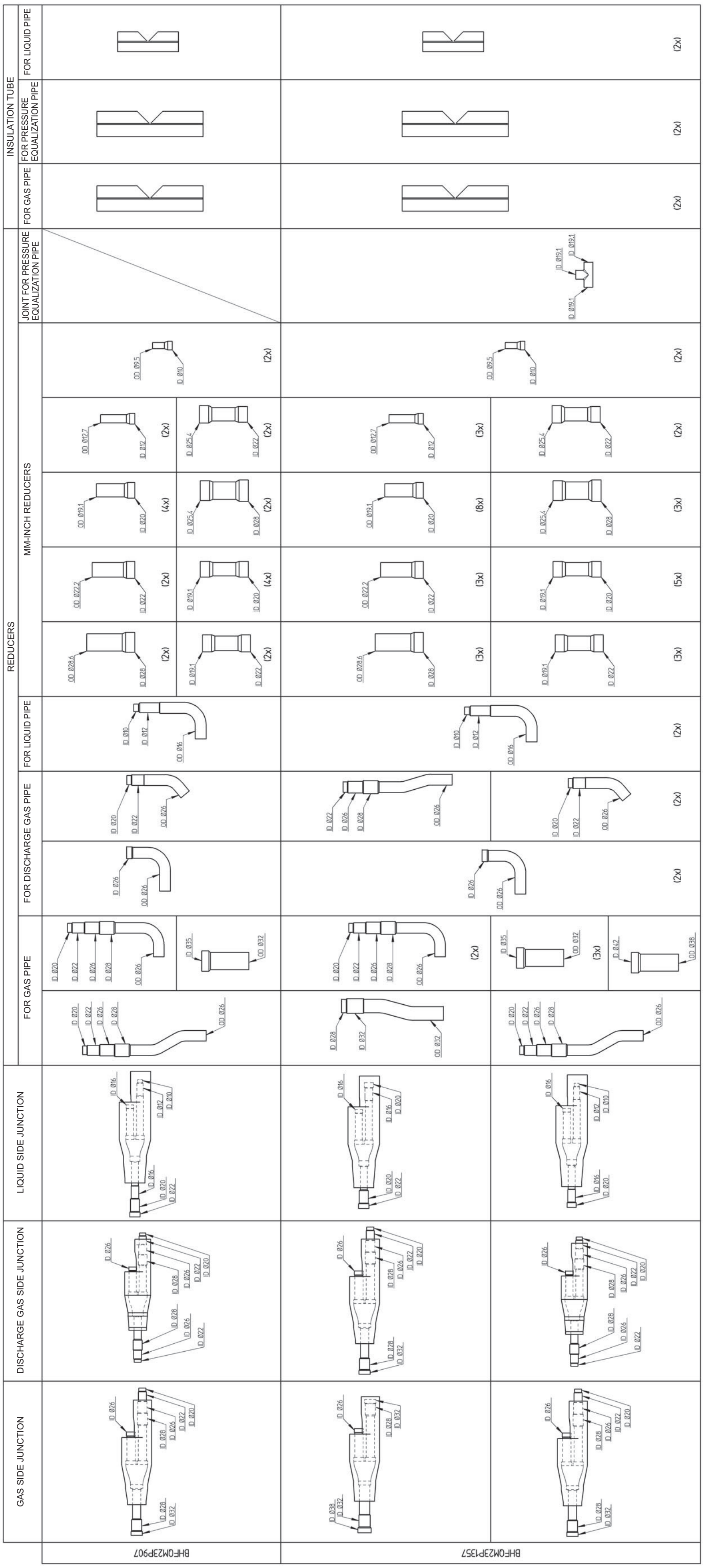


2TW29659-1

5 Refnet pipe systems

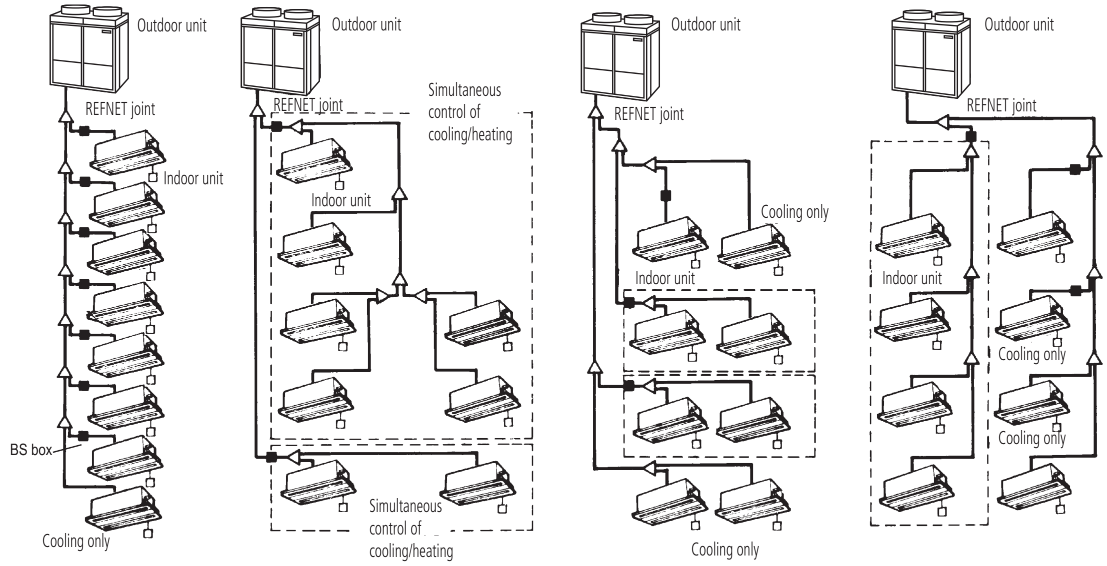
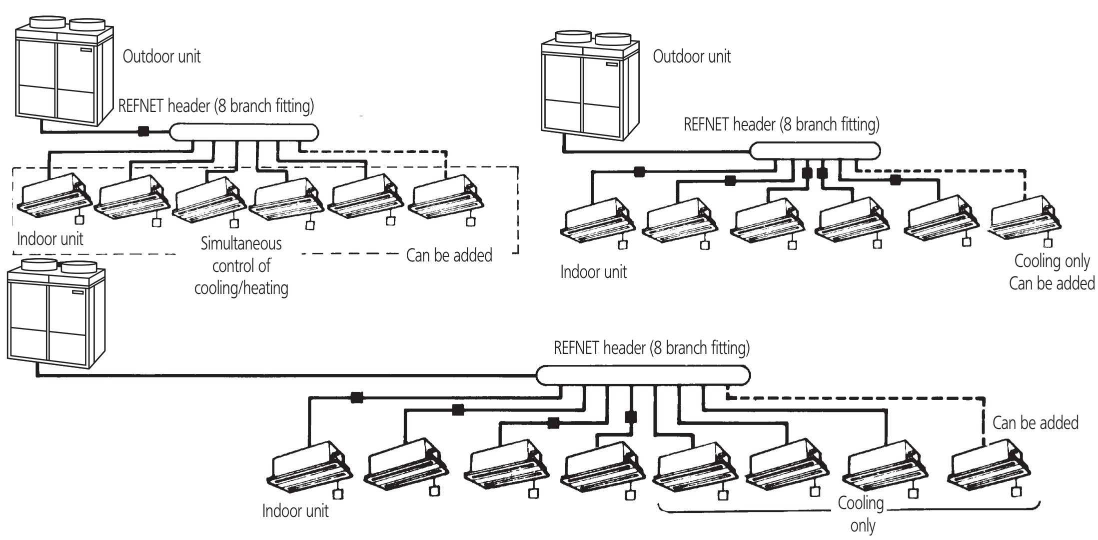
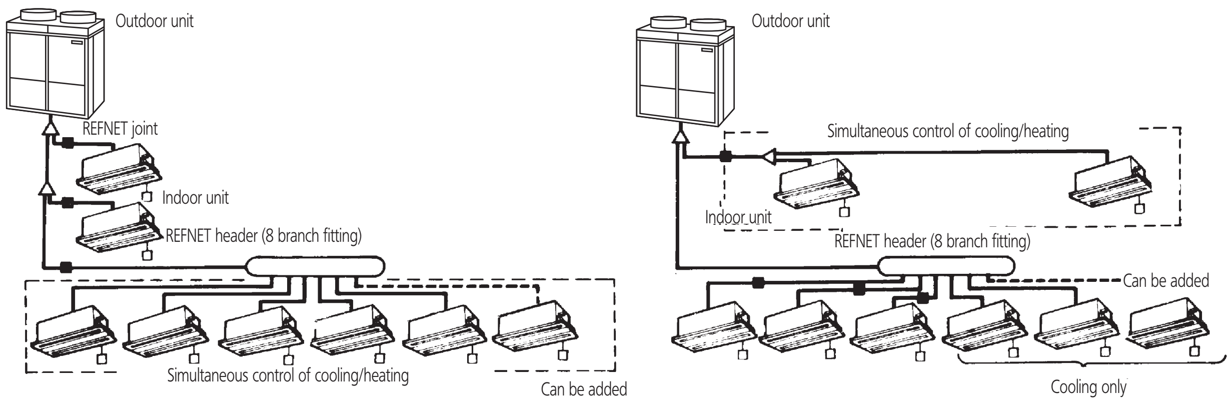


5 Refnet pipe systems



1TW29119-2

6 Example of Refnet piping layouts

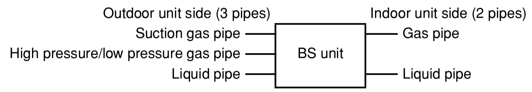
<table>
<tr><th>Type of fitting</th><th>Sample systems</th></tr>
<tr><td>Distribution by REFNET joints</td><td>
</td></tr>
<tr><td>Distribution by REFNET header</td><td>
</td></tr>
<tr><td>Distribution by REFNET joints and headers</td><td>
</td></tr>
</table>

7 Refrigerant pipe selection

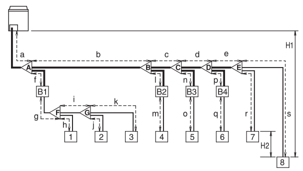
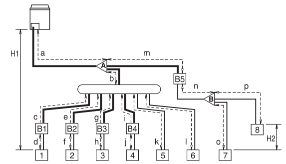
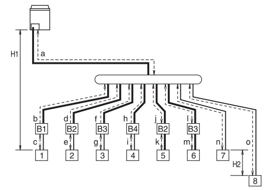
7 - 1 VRV®III heat recovery small footprint combination

REYQ8,12P9, REYQ10,14,16P8

Example of connection
(Connection of 8 indoor units)



Single outdoor unit system (REYQ8~16)

Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
		

1 indoor unit
A refnet joint
refnet header
Outdoor unit side (3 pipes)
Indoor unit side (2 pipes)

			Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor and indoor units ≤165 m		
			[Example] unit 8: a+b+c+d+e+s≤165 m	[Example] unit 6: a+b+l≤165 m, unit 8: a+m+n+p≤165 m	[Example] unit 8: a+o≤165 m
		Equivalent length	Equivalent pipe length between outdoor and indoor units ≤190 m (Assume equivalent pipe length of the refnet joint to be 0.5 m, of the refnet header to be 1.0 m, of the BSVQ100 and BSVQ160 to be 4 m and of the BSVQ250 to be 6 m (for calculation purposes)) (See note 1 on next page)		
		Total extension length	Total piping length from outdoor to all indoor units ≤1000 m		
Allowable height difference	Between outdoor and indoor units		Difference in height between outdoor and indoor units (H1)≤50 m (≤40 m if outdoor unit is located in a lower position).		
	Between indoor and indoor units		Difference in height between adjacent indoor units (H2)≤15 m		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either refnet joint or refnet header) to indoor unit ≤40 m (See note 2 on next page)		
			[Example] unit 8: b+c+d+e+s≤40 m	[Example] unit 6: b+l≤40 m, unit 8: m+n+p≤40 m	[Example] unit 8: o≤40 m

Refrigerant branch kit selection

⚠ Refrigerant branch kits can only be used with R410A.

How to select the refnet joint
When using refnet joints at the first branch counted from the outdoor unit side, choose from the following table in accordance with the capacity of the outdoor unit (example: refnet joint A).

Outdoor unit capacity type (Hp)	Refrigerant branch kit name
8+10	KHRQ23M29T9
12~16	KHRQ23M64T

For refnet joints other than the first branch, select the proper branch kit model based on the total capacity index of all indoor units connected after the refrigerant branch.

Indoor capacity type	Refrigerant branch kit name: 3 pipes	Refrigerant branch kit name: 2 pipes
<200	KHRQ23M20T	KHRQ22M20T
200≤x<290	KHRQ23M29T9	KHRQ22M29T
290≤x<640	KHRQ23M64T	KHRQ22M64T
≥640	KHRQ23M75T	KHRQ22M75T

How to select the refnet header
Choose from the following table in accordance with the total capacity of all the indoor units connected below the refnet header.
Note: 250 type indoor unit can not be connected lower than the refnet header.

Indoor capacity type	Refrigerant branch kit name: 3 pipes	Refrigerant branch kit name: 2 pipes
<200	KHRQ23M29H	KHRQ22M29H
200≤x<290	KHRQ23M29H	KHRQ22M29H
290≤x<640	KHRQ23M64H	KHRQ22M64H
≥640	KHRQ23M75H	KHRQ22M75H

Example of downstream indoor units	Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
	[Example] in case of refnet joint C: indoor units 5+6+7+8	[Example] in case of refnet joint G: indoor units 7+8, in case of refnet header: indoor units 1+2+3+4+5+6	[Example] in case of refnet header: indoor units 1+2+3+4+5+6+7+8

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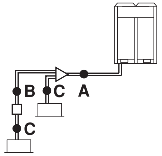
2 7

7 Refrigerant pipe selection

7 - 1 VRV®III heat recovery small footprint combination

REYQ8,12P9, REYQ10,14,16P8

Pipe size selection
For an outdoor unit, select the pipe size in accordance with the following figure.



A. Piping between outdoor unit and refrigerant branch kit
Choose from the following table in accordance with the outdoor unit total capacity type, connected downstream.

Outdoor unit capacity type (Hp)	Piping outer diameter size (mm)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
8	19.1	15.9	9.5
10	22.2	19.1	9.5
12	28.6	19.1	12.7
14+16	28.6	22.2	12.7

B. Piping between refrigerant branch kit and BS unit
Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit. Choose from the following table in accordance with the indoor unit total capacity type, connected downstream.

Indoor unit capacity type	Piping outer diameter size (mm)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
<150	15.9	12.7	9.5
150≤x<200	19.1	15.9	9.5
200≤x<290	22.2	19.1	9.5
290≤x<420	28.6	19.1	12.7
420≤x<640	28.6	28.6	15.9
640≤x<920	34.9	28.6	19.1
≥920	41.3	28.6	19.1

C. Piping between refrigerant branch kit or BS unit and indoor unit
Choose from the following table in accordance with the capacity type of the connected indoor unit.

Indoor unit capacity type	Piping outer diameter size (mm)	
	Suction gas pipe	Liquid pipe
20, 25, 32, 40, 50	12.7	6.4
63, 80, 100, 125	15.9	9.5
200	19.1	9.5
250	22.2	9.5

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
R should be rounded off in units of 0.1 kg

$$R = \left[[(X_1 \times \mathbf{Ø22.2})\ x0.37] + [(X_2 \times \mathbf{Ø19.1})\ x0.26] + [(X_3 \times \mathbf{Ø15.9})\ x0.18] + [(X_4 \times \mathbf{Ø12.7})\ x0.12] + [(X_5 \times \mathbf{Ø9.5})\ x0.059] + [(X_6 \times \mathbf{Ø6.4})\ x0.022] \right] \times 1.02 + 3.6 + \mathbf{A}$$

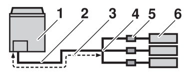
A	
>100% ≤130%	**0.5** kg

$X_{1...6}$ = Total length (m) of liquid piping size at **Øa**
A = Weight according to table A in function of indoor unit connection ratio

Note 1

When the equivalent pipe length between outdoor and indoor units is 90 m or more, the size of the main liquid pipe must be increased. Never increase suction gas pipe and HP/LP gas pipe sizes.
Depending on the length of the piping, the capacity may drop, but even in such a case it is possible to increase the size of the main liquid pipe.

Hp	Ø
8+10	9.5 → 12.7
12~16	12.7 → 15.9



1 Outdoor unit
2 Main pipes
3 Increase only liquid pipe size
4 First refrigerant branch kit
5 BS unit
6 Indoor unit

Note 2

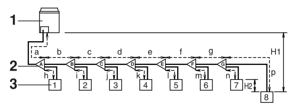
Allowable length after the first refrigerant branch kit to indoor units is 40 m or less, however it can be extended up to 90 m if all the following conditions are fulfilled.

Required conditions	Example drawings	
It is necessary to increase the pipe size of the liquid and suction gas pipe if the pipe length between the first and the final branch kit is over 40 m (reducers must be procured on site). Increasing the HP/LP gas pipe size is not allowed. ■ If the increased liquid pipe size is larger than the pipe size of the main liquid pipe, then the pipe size of the main liquid pipe needs to be increased as well. ■ If the increased suction gas pipe size is larger than the pipe size of the main suction gas pipe, then the allowable length after the first refrigerant branch kit may not be increased to 90 m. Size-up of the main suction gas pipe may affect a good oil return to the outdoor unit due to influence of the HP/LP gas pipe.	indoor unit **8**: b+c+d+e+f+g+p≤90 m increase the pipe size of b, c, d, e, f, g	Increase the pipe size as follows (see tables below)
For calculation of total extension length, the actual length of above pipes must be doubled (except length of main pipes and of pipes which do not have an increased pipe size).	a+b*2+c*2+d*2+e*2+f*2+g*2+h+i+j+k+l+m+n+p≤1000 m	(see drawing below)
Indoor unit to the nearest branch kit ≤40 m	h, i, j....... p≤40 m	
The difference between the distance of the outdoor unit to the farthest indoor unit and the distance of the outdoor unit to the nearest indoor unit ≤40 m	The most remote indoor unit **8** The nearest indoor unit **1** (a+b+c+d+e+f+g+p)−(a+h)≤40 m	

	Gas side	
REYQ8	Ø19.1 →	Ø22.2
REYQ10	Ø22.2	Ø25.4[(a)]
REYQ12+14	Ø28.6	—
REYQ16	Ø28.6 →	Ø31.8[(a)]

Liquid side
Ø9.5 → Ø12.7
Ø12.7 → Ø15.9
Ø15.9 → Ø19.1
Ø19.1 → Ø22.2

— Increase is not allowed
(a) If not available, increase is not allowed



1 Outdoor unit
2 Refnet joints (a~g)
3 Indoor units (1~8)

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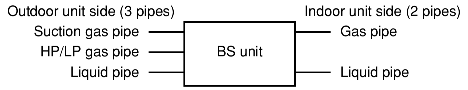
7 Refrigerant pipe selection

7 - 2 VRV®III heat recovery small footprint combination/high COP combination

REYQ18-48P8/9, REYHQ-P

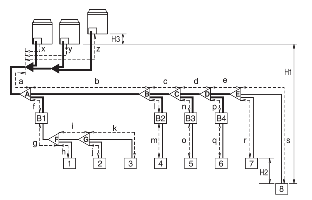
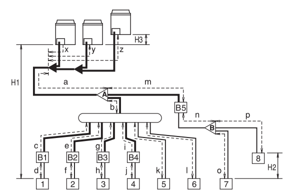
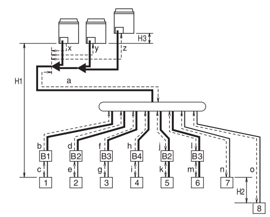
Example of connection
(Connection of 8 indoor units)

⚠ Use the outdoor unit multi connection piping kit that is sold separately as an option (BHFQ23P907+1357) for the multi installation of outdoor units. Selection method is as shown in the right table.



Install the joint part (◄ part in the figure) of the outdoor unit multi connection piping kit horizontally with attention to the installation restrictions described in "connecting the refrigerant piping".
(*) In case of multi combination, interprete the word "outdoor" as "first outdoor branch".

Outdoor units installed in a multiple outdoor unit system (REYQ18~48 + REYHQ16 + REYHQ20~24)

Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
		

1 indoor unit — A refnet joint — refnet header — ◄ outdoor multi connection piping kit — Outdoor unit side (3 pipes) (thick line) — Indoor unit side (2 pipes) (thin line)

			Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor(*) and indoor units ≤165 m		
			[Example] unit 8: a+b+c+d+e+s≤165 m	[Example] unit 6: a+b+l≤165 m, unit 8: a+m+n+p≤165 m	[Example] unit 8: a+o≤165 m
		Equivalent length	Equivalent pipe length between outdoor(*) and indoor units ≤190 m (Assume equivalent pipe length of the refnet joint to be 0.5 m, of the refnet header to be 1.0 m, of the BSVQ100 and BSVQ160 to be 4 m and of the BSVQ250 to be 6 m (for calculation purposes)) (See note 1)		
		Total extension length	Total piping length from outdoor(*) to all indoor units ≤1000 m		
	Between the first outdoor unit multi connection piping kit and outdoor unit (in case of a multiple outdoor unit system)	Actual and equivalent pipe length	The actual pipe length from the first outdoor unit multi connection piping kit to the outdoor unit ≤10 m. (x≤10 m, y≤10 m, z≤10 m) The equivalent pipe length from the first outdoor unit multi connection piping kit to the outdoor unit ≤13 m. (x≤13 m, y≤13 m, z≤13 m)		
Allowable height difference	Between outdoor and indoor units		Difference in height between outdoor and indoor units (H1)≤50 m (≤40 m if outdoor unit is located in a lower position).		
	Between indoor and indoor units		Difference in height between adjacent indoor units (H2)≤15 m		
	Between outdoor and outdoor units		Difference in height between adjacent outdoor units (H3)≤5 m		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either refnet joint or refnet header) to indoor unit ≤40 m (See note 2)		
			[Example] unit 8: b+c+d+e+s≤40 m	[Example] unit 6: b+l≤40 m, unit 8: m+n+p≤40 m	[Example] unit 8: o≤40 m

Outdoor unit multi connection piping kit and refrigerant branch kit selection

⚠ Refrigerant branch kits can only be used with R410A.

How to select the refnet joint
When using refnet joints at the first branch counted from the outdoor unit side, choose from the following table in accordance with the capacity of the outdoor unit (example: refnet joint A).

Outdoor unit capacity type (Hp)	Refrigerant branch kit name
8+10	KHRQ23M29T
12~22	KHRQ23M64T
≥24	KHRQ23M75T

For refnet joints other than the first branch, select the proper branch kit model based on the total capacity index of all indoor units connected after the refrigerant branch.

Indoor capacity type	Refrigerant branch kit name	
	3 pipes	2 pipes
<200	KHRQ23M20T	KHRQ22M20T
200≤x<290	KHRQ23M29T9	KHRQ22M29T
290≤x<640	KHRQ23M64T	KHRQ22M64T
≥640	KHRQ23M75T	KHRQ22M75T

How to select the refnet header
Choose from the following table in accordance with the total capacity of all the indoor units connected below the refnet header.
Note: 250 type indoor unit can not be connected lower than the refnet header.

Indoor capacity type	Refrigerant branch kit name	
	3 pipes	2 pipes
<200	KHRQ23M29H	KHRQ22M29H
200≤x<290	KHRQ23M29H	KHRQ22M29H
290≤x<640	KHRQ23M64H	KHRQ22M64H
≥640	KHRQ23M75H	KHRQ22M75H

How to choose an outdoor multi connection piping kit (this is required when the system is a multiple outdoor unit system)
Choose from the following table in accordance with the number of outdoor units

Number of outdoor units	Branch kit name
2	BHFQ23P907
3	BHFQ23P1357

Example of downstream indoor units		
[Example] in case of refnet joint C: indoor units 5+6+7+8	[Example] in case of refnet joint G: indoor units 7+8, in case of refnet header: indoor units 1+2+3+4+5+6	[Example] in case of refnet header: indoor units 1+2+3+4+5+6+7+8

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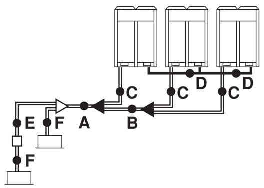
2 7

7 Refrigerant pipe selection

7 - 2 VRV®III heat recovery small footprint combination/high COP combination

REYQ18-48P8/9, REYHQ-P

Pipe size selection
For an outdoor unit multi installation (REYQ18~48P + REYHQ16~24), select the pipe size in accordance with the following figure.



A. Piping between outdoor unit and refrigerant branch kit
B. Piping between outdoor unit multi connection piping units
Choose from the following table in accordance with the outdoor unit total capacity type, connected downstream.

Outdoor unit capacity type (Hp)	Piping outer diameter size (mm)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
8	19.1	15.9	9.5
10	22.2	19.1	9.5
12	28.6	19.1	12.7
14+16	28.6	22.2	12.7
18	28.6	22.2	15.9
20+22	28.6	28.6	15.9
24	34.9	28.6	15.9
26~34	34.9	28.6	19.1
36	41.3	28.6	19.1
38~48	41.3	34.9	19.1

C. Piping between outdoor unit multi connection piping kit and outdoor unit
Choose from the following table in accordance with the capacity type of the connected outdoor unit.

Outdoor unit capacity type (Hp)	Piping outer diameter size (mm)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
8+10	22.2	19.1	9.5
12	28.6	19.1	12.7
14+16	28.6	22.2	12.7

E. Piping between refrigerant branch kit and BS unit
Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit.
Choose from the following table in accordance with the indoor unit total capacity type, connected downstream.

Indoor unit capacity type	Piping outer diameter size (mm)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
<150	15.9	12.7	9.5
150≤x<200	19.1	15.9	9.5
200≤x<290	22.2	19.1	9.5
290≤x<420	28.6	19.1	12.7
420≤x<640	28.6	28.6	15.9
640≤x<920	34.9	28.6	19.1
≥920	41.3	28.6	19.1

F. Piping between refrigerant branch kit or BS unit and indoor unit
Choose from the following table in accordance with the capacity type of the connected indoor unit.

Indoor unit capacity type	Piping outer diameter size (mm)	
	Suction gas pipe	Liquid pipe
20, 25, 32, 40, 50	12.7	6.4
63, 80, 100, 125	15.9	9.5
200	19.1	9.5
250	22.2	9.5

D. Equalizer piping (outdoor units only)

Piping outer diameter size (mm)	19.1

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
R should be rounded off in units of 0.1 kg

⚠ The refrigerant charge of the system must be less than 100 kg. This means that in case the calculated refrigerant charge is equal to or more than 95 kg you must divide your multiple outdoor system into smaller independent systems, each containing less than 95 kg refrigerant charge.
For factory charge, refer to the unit name plate.

$$R = \begin{bmatrix} [(X_1 \times \mathbf{Ø22.2}) \times 0.37] + [(X_2 \times \mathbf{Ø19.1}) \times 0.26] + \\ [(X_3 \times \mathbf{Ø15.9}) \times 0.18] + [(X_4 \times \mathbf{Ø12.7}) \times 0.12] + \\ [(X_5 \times \mathbf{Ø9.5}) \times 0.059] + [(X_6 \times \mathbf{Ø6.4}) \times 0.022] \end{bmatrix} \times 1.02 + \mathbf{A} + \mathbf{B}$$

$X_{1...6}$ = Total length (m) of liquid piping size at **Øa**
A = Weight according to table A
B = Weight according to table B in function of indoor unit connection ratio

REYQ	A
18+20 Hp	**1.0** kg
22+24 Hp	**1.5** kg
26 Hp	**2.0** kg
28+30 Hp	**2.5** kg
32~40 Hp	**3.0** kg
42 Hp	**3.5** kg
44+46 Hp	**4.0** kg
48 Hp	**4.5** kg

REYHQ	A
16 Hp	**1.0** kg
20 Hp	**1.5** kg
22+24 Hp	**2.0** kg

REY(H)Q		B
16~32 Hp	>100% ≤130%	**0.5** kg
34~48 Hp	>100% ≤120%	**0.5** kg
	>120% ≤130%	**1.0** kg

Example for refrigerant branch using refnet joint and refnet header for REYQ34. REYQ34 = REMQ8+REMQ10+REMQ16, the indoor unit connection ratio = 120% and the piping lengths are as below.

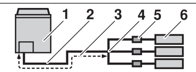
a : Ø19.1x30 m	f : Ø9.5x10 m	k : Ø9.5x20 m	p : Ø6.4x10 m
b : Ø19.1x20 m	g : Ø9.5x10 m	l : Ø9.5x20 m	r : 12.7x3 m
c : Ø9.5x10 m	h : Ø9.5x10 m	m: Ø9.5x20 m	s : Ø9.5x3 m
d : Ø9.5x10 m	i : Ø9.5x10 m	n : Ø9.5x10 m	t : Ø9.5x3 m
e : Ø9.5x10 m	j : Ø9.5x10 m	o : Ø6.4x10 m	u : Ø15.9x1 m

R = [[50x0.26]+[1x0.18]+[3x0.12]+[156x0.059]+[20x0.022]]x1.02**+3.0+0.5**
= 27.148 ⇒ **R = 27.1 kg**

Note 1

When the equivalent pipe length between outdoor and indoor units is 90 m or more, the size of the main liquid pipe must be increased. Never increase suction gas pipe and HP/LP gas pipe sizes.
Depending on the length of the piping, the capacity may drop, but even in such a case it is possible to increase the size of the main liquid pipe.

REY(H)Q	Ø	REY(H)Q	Ø
8+10	9.5 → 12.7	18~24	15.9 → 19.1
12~16	12.7 → 15.9	26~48	19.1 → 22.2



1 Outdoor unit
2 Main pipes
3 Increase only liquid pipe size
4 First refrigerant branch kit
5 BS unit
6 Indoor unit

Note 2

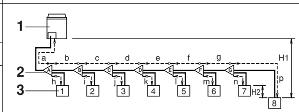
Allowable length after the first refrigerant branch kit to indoor units is 40 m or less, however it can be extended up to 90 m if all the following conditions are fulfilled.

Required conditions	Example drawings	
It is necessary to increase the pipe size of the liquid and suction gas pipe if the pipe length between the first and the final branch kit is over 40 m (reducers must be procured on site). Increasing the HP/LP gas pipe size is not allowed. ■ If the increased liquid pipe size is larger than the pipe size of the main liquid pipe, then the pipe size of the main liquid pipe needs to be increased as well. ■ If the increased suction gas pipe size is larger than the pipe size of the main suction gas pipe, then the allowable length after the first refrigerant branch kit may not be increased to 90 m. Size-up of the main suction gas pipe may affect a good oil return to the outdoor unit due to influence of the HP/LP gas pipe.	indoor unit **8**: b+c+d+e+f+g+p≤90 m increase the pipe size of b, c, d, e, f, g	Increase the pipe size as follows (see tables below)
For calculation of total extension length, the actual length of above pipes must be doubled (except length of main pipes and of pipes which do not have an increased pipe size).	a+b*2+c*2+d*2+e*2+f*2+g*2 +h+i+j+k+l+m+n+p≤1000 m	
Indoor unit to the nearest branch kit ≤40 m	h, i, j....... p≤40 m	
The difference between the distance of the outdoor unit to the farthest indoor unit and the distance of the outdoor unit to the nearest indoor unit ≤40 m	The most remote indoor unit **8** The nearest indoor unit **1** (a+b+c+d+e+f+g+p)–(a+h)≤40 m	

	Gas side
REYQ18~22	Ø28.6 → Ø31.8[(a)]
REYQ24	Ø34.9 —
REYQ26~34	Ø34.9 → Ø38.1[(a)]
REYQ36~48	Ø41.3 —
REYHQ16+20+22	Ø28.6 → Ø31.8[(a)]
REYHQ24	Ø34.9 —

Liquid side
Ø9.5 → Ø12.7
Ø12.7 → Ø15.9
Ø15.9 → Ø19.1
Ø19.1 → Ø22.2

— Increase is not allowed
(a) If not available, increase is not allowed



1 Outdoor unit
2 Refnet joints (a~g)
3 Indoor units (1~8)

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7 Refrigerant pipe selection

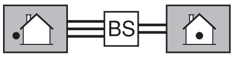
7 - 3 VRV®III heat recovery with connection to heating only hydrobox

REYAQ-P

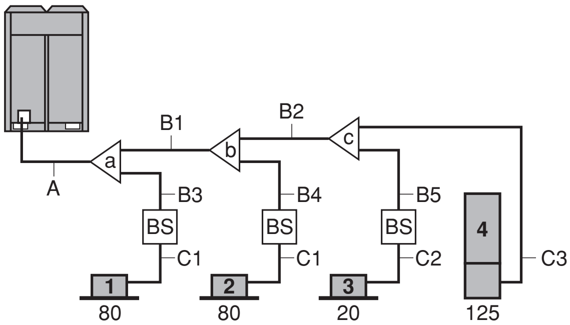
Selection of piping size

NOTICE

- HXHD indoor units do not require a branch selector box (BS box). They only require HP/LP gas and liquid pipe connections.
- Other indoor units need to be connected to a branch selector box (BS box)(need 3 pipes).



- Size: determine the proper size referring to following table:



Refnet joint

BS Branch selector box

1, 2, 3 Indoor unit
4 HXHD indoor unit

A. Piping between outdoor unit and first branch pipe

Outdoor unit capacity type (Hp)	Piping outer diameter size (mm)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
10	22.2	19.1	9.5
12	28.6	19.1	12.7
14+16	28.6	22.2	12.7

B. Piping between refrigerant branch kits and branch selector box (BS box)
Choose from the following table in accordance with the indoor unit total capacity type, connected downstream:

Indoor unit capacity index	Piping outer diameter size (mm)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
<150	15.9	12.7	9.5
150≤x<200	19.1	15.9	9.5
200≤x<290	22.2	19.1	9.5
290≤x<420	28.6	19.1	12.7
420≤x<640	28.6	28.6	15.9
640≤x≤800	34.9	28.6	19.1

Example:
Total capacity connected downstream for B1 = capacity index indoor 2 + capacity index indoor 3 + capacity index indoor 4 = 225
Total capacity connected downstream for B2 = capacity index indoor 3 + capacity index indoor 4 = 145
Total capacity connected downstream for B3/B4 = capacity index indoor 1/2 = 80
Total capacity connected downstream for B5 = capacity index indoor 3 = 20

C. Piping between refrigerant branch kit or branch selector box and indoor unit
Pipe size for direct connection to indoor unit must be the same as the connection size of the indoor unit.

- **For HXHD indoor unit:**

Indoor unit capacity type	Piping outer diameter size (mm)	
	HP/LP gas pipe	Liquid pipe
125	12.7	9.5

- **For other indoor units:**

Indoor unit capacity type	Piping outer diameter size (mm)	
	Suction gas pipe	Liquid pipe
20, 25, 32, 40, 50	12.7	6.4
63, 80, 100, 125	15.9	9.5
200	19.1	9.5
250	22.2	9.5

Example:

	Indoor unit capacity index	Suction gas pipe or HP/LP gas pipe[(a)]	Liquid pipe
C1	80	15.9	9.5
C2	20	12.7	6.4
C3	125[(a)]	12.7[(a)]	9.5[(a)]

(a) HXHD indoor unit

- The pipe thickness of the refrigerant piping shall comply with the applicable legislation. The minimal pipe thickness for R410A piping must be in accordance with the table below.

Pipe Ø	Minimal thickness t (mm)
6.4	0.80
9.5	0.80
12.7	0.80
15.9	0.99
19.1	0.80
22.2	0.80
28.6	0.99
34.9	1.21

- In case the required pipe sizes (inch sizes) are not available, it is also allowed to use other diameters (mm sizes), taken the following into account:
  - select the pipe size nearest to the required size.
  - use the suitable adapters for the change-over from inch to mm pipes (field supply).

Selection of refrigerant branch kits

Refrigerant refnets

- When using refnet joints at the first branch counted from the outdoor unit side, choose from the following table in accordance with the capacity of the outdoor unit (example: refnet joint a)

Outdoor unit capacity type (Hp)	Refrigerant branch kit name	
	3 pipes	2 pipes
10	KHRQ23M29T	KHRQ22M29T
12~16	KHRQ23M64T	KHRQ22M64T

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7 Refrigerant pipe selection

7 - 3 VRV®III heat recovery with connection to heating only hydrobox

REYAQ-P

- For refnets joints other than the first branch (example refnet joint b and c), select the proper branch kit model based on the total capacity index of all indoor units connected after the refrigerant branch.

Indoor unit capacity index	Refrigerant branch kit name	
	3 pipes	2 pipes
<200	KHRQ23M20T	KHRQ22M20T
200≤x<290	KHRQ23M29T	KHRQ22M29T
290≤x<640	KHRQ23M64T	KHRQ22M64T
640≥	KHRQ23M75T	KHRQ22M75T

- Concerning refnet headers, choose from the following table in accordance with the total capacity of all the indoor units connected below the refnet header:

Indoor unit capacity index	Refrigerant branch kit name	
	3 pipes	2 pipes
<200	KHRQ23M29H	KHRQ22M29H
200≤x<290	KHRQ23M29H	KHRQ22M29H
290≤x<640	KHRQ23M64H	KHRQ22M64H
640≥	KHRQ23M75H	KHRQ22M75H

NOTICE

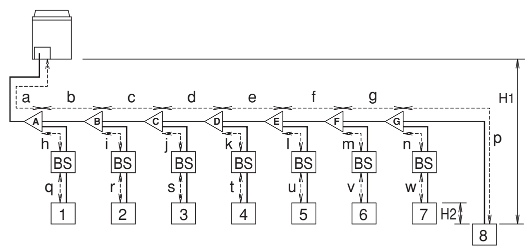
Refrigerant branch kits can only be used with R410A.

System piping limitations

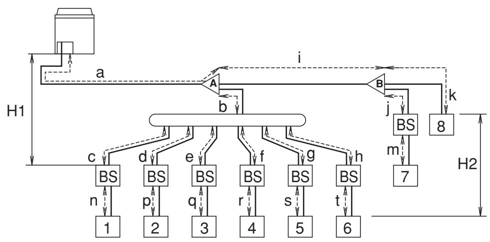
Piping length restrictions

Make sure to perform the piping installation within the range of the maximum allowable pipe length, allowable level difference and allowable length after branching as indicated below ("8"=HXHD125):

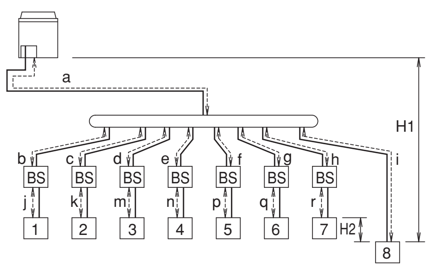
Example 1: Branch with refnet joint



Example 2: Branch with refnet joint and refnet header



Example 3: Branch with refnet header



Maximum allowable lengths

Actual pipe length between outdoor and indoor unit ≤100 m

Example 1: a+b+c+d+e+f+g+p≤100 m a+b+c+d+k+t≤100 m

Example 2: a+i+k≤100 m a+b+e+q≤100 m

Example 3: a+i≤100 m a+d+m≤100 m

Equivalent piping length between indoor and outdoor unit ≤120 m equivalent pipe length of refnet to be taken 0.5 m and for header 1.0 m.

Equivalent pipe length of BSVQ100 = 4 m
Equivalent pipe length of BSVQ160 = 4 m
Equivalent pipe length of BSVQ250 = 6 m

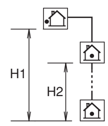
Total piping length from outdoor to all indoor units ≤300 m

Pipe length from first branch kit (either refnet joint or refnet header) to indoor unit ≤40 m
[Example 1]: unit 8: b+c+d+e+f+g+p≤40 m
[Example 2]: unit 6: b+h+t≤40 m, unit 8: i+k≤40 m
[Example 3]: unit 8: i≤40 m, unit 2: c+k≤40 m

Maximum allowable height difference

Difference in height between outdoor and indoor units H1≤40 m

Difference in height between lowest and heighest indoor unit H2≤15 m



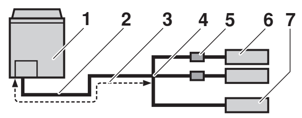
NOTICE

When the equivalent pipe length between outdoor and indoor units is 90 m or more, the size of the main liquid pipe must be increased. Never increase suction gas pipe and HP/LP gas pipe sizes.

Depending on the length of the piping, the capacity may drop, but even in such a case it is possible to increase the size of the main liquid pipe.

HP	Liquid Ø (mm)
10	9.5 → 12.7
12~16	12.7 → 15.9

Make sure to perform the piping installation within the range of the maximum allowable pipe length, allowable level difference and allowable length after branching as indicated above.



1. Outdoor unit
2. Main pipes
3. Increase only liquid pipe size
4. First refrigerant branch kit
5. Branch selector box
6. Indoor unit
7. HXHD125 indoor unit

4PW62582-1A

7 Refrigerant pipe selection

7 - 4 VRV®III heat pump small footprint combination / high COP combination/heating only

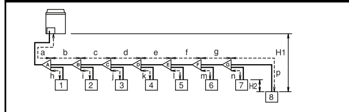
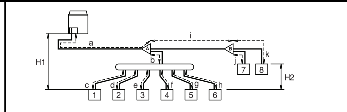
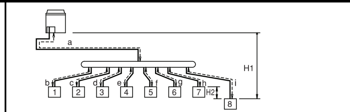
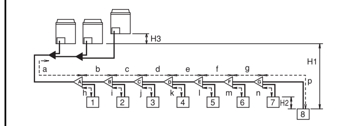
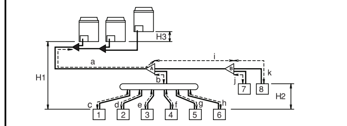
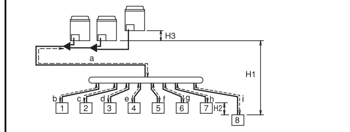
RXYQ-P9, RXYHQ-P9, RXHQ-P9

Example of connection
(Connection of 8 indoor units Heat pump system)

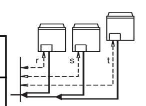
- Use the outdoor unit multi connection piping kit that is sold separately as an option (BHFQ22P1007+1517) for the multi installation of outdoor units. Selection method is as shown in the right table.
- Do not use the outdoor unit multi connection piping kit (BHFQ22M909+1359) that are sold separately as an option of the M-type series and do not use T-joints.

1 indoor unit
A refnet joint
refnet header
◄ outdoor multi connection piping kit

Install the joint part (◄ part in the figure) of the outdoor unit multi connection piping kit horizontally with attention to the installation restrictions described in "connecting the refrigerant piping".
(*) If the system capacity is 20 or more, re-read to the first outdoor branch as seen from the indoor unit.

	Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
One outdoor unit installed (RXYQ5~18 + RXHQ8~18 + RXYHQ12)			
Outdoor units installed in a multiple outdoor unit system (RX(Y/H)Q20~54 + RXYHQ16~36)			

			Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor(*) and indoor units ≤165 m		
			[Example] unit 8: a+b+c+d+e+f+g+p≤165 m	[Example] unit 6: a+b+h≤165 m, unit 8: a+i+k≤165 m	[Example] unit 8: a+i≤165 m
		Equivalent length	Equivalent pipe length between outdoor(*) and indoor units ≤190 m (Assume equivalent pipe length of refnet joint to be 0.5 m and of the refnet header to be 1.0 m. (for calculation purposes))		
		Total extension length	Total piping length from outdoor unit* to all indoor units ≤1000 m		
	Between outdoor branch and outdoor unit (Only for RX(Y/H)Q20 and RXYHQ20 or more)	Actual pipe length	Piping length from outdoor branch to outdoor unit ≤10 m. Approximate length: max. 13 m		
Allowable height	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1)≤50 m (≤40 m if outdoor unit is located in a lower position).		
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2)≤15 m		
	Between outdoor and outdoor units	Difference in height	Difference in height between outdoor unit (main) and outdoor unit (sub) (H3)≤5 m		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either refnet joint or refnet header) to indoor unit ≤40 m (See note 1 on next page)		
			[Example] unit 8: b+c+d+e+f+g+p≤40 m	[Example] unit 6: b+h≤40 m, unit 8: i+k≤40 m	[Example] unit 8: i≤40 m
Refrigerant branch kit selection	Example of downstream indoor units		[Example] in case of refnet joint C; indoor units 3+4+5+6+7+8	[Example] in case of refnet joint B; indoor units 7+8, in case of refnet header; indoor units 1+2+3+4+5+6	[Example] in case of refnet header; indoor units 1+2+3+4+5+6+7+8



r≤10 m (Approximate length: max. 13 m)
s≤10 m (Approximate length: max: 13 m)
t≤10 m (Approximate length: max: 13 m)

Refrigerant branch kit selection

Refrigerant branch kits can only be used with R410A.

How to select the refnet joint
- When using refnet joints at the first branch counted from the outdoor unit side. Choose from the following table in accordance with the capacity of the outdoor unit.

Outdoor unit capacity type	Refrigerant branch kit name
RXYQ5	KHRQ22M20T
RX(Y/H)Q8~10	KHRQ22M29T9
RX(Y/H)Q12~22 + RXYHQ12 + RXYHQ16~22	KHRQ22M64T
RX(Y/H)Q24~54	KHRQ22M75T

- For refnet joints other than the first branch, select the proper branch kit model based on the total capacity index.

Indoor capacity type	Refrigerant branch kit name
<200	KHRQ22M20T
200≤x<290	KHRQ22M29T9
290≤x<640	KHRQ22M64T
≥640	KHRQ22M75T

How to select the refnet header
- Choose from the following table in accordance with the total capacity of all the indoor units connected below the refnet header.
- Note: 250 type cannot be connected below the refnet header.

Indoor capacity type	Refrigerant branch kit name
<290	KHRQ22M29H (Max. 8 branch)
290≤x<640	KHRQ22M64H (Max. 8 branch)[a]
≥640	KHRQ22M75H (Max. 8 branch)

(a) See note 2 on next page

How to choose an outdoor multi connection piping kit (needed if the outdoor unit capacity type is RX(Y/H)Q20 or RXYHQ20 or more.)
- Choose from the following table in accordance with the number of outdoor units.

Number of outdoor units	Branch kit name
2	BHFQ22P1007
3	BHFQ22P1517

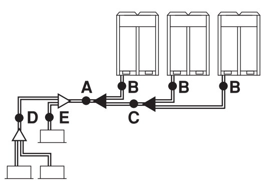
4PW67902-1(1)

7 Refrigerant pipe selection

7 - 4 VRV®III heat pump small footprint combination / high COP combination/heating only

RXYQ-P9, RXYHQ-P9, RXHQ-P9

Pipe size selection
For an outdoor unit multi installation (RX(Y/H)Q20~54P + RXYHQ16~36), select the pipe size in accordance with the following figure.



A,B,C. Piping between outdoor unit and refrigerant branch kit
- Choose from the following table in accordance with the outdoor unit total capacity type, connected downstream.

Outdoor unit connection piping size

Outdoor unit capacity type	Piping size (outer diameter) (mm) Gas pipe	Liquid pipe
RXYQ5	Ø15.9	Ø9.5
RX(Y/H)Q8	Ø19.1	
RX(Y/H)Q10	Ø22.2	
RX(Y/H)Q12~16 + RXYHQ12+16	Ø28.6	Ø12.7
RX(Y/H)Q1~22 + RXYHQ18~22		Ø15.9
RX(Y/H)Q24 + RXYHQ24	Ø34.9	
RX(Y/H)Q26~34 + RXYHQ26~34		Ø19.1
RX(Y/H)Q36~54 + RXYHQ36	Ø41.3	

D. Piping between refrigerant branch kits
- Choose from the following table in accordance with the total capacity of all the indoor units connected below this.
- Do not let the connection piping exceed the refrigerant piping size chosen by general system model name.

Indoor or outdoor unit total capacity	Piping size (outer diameter) (mm) Gas pipe	Liquid pipe
<150	Ø15.9	Ø9.5
150≤x<200	Ø19.1	
200≤x<290	Ø22.2	
290≤x<420	Ø28.6	Ø12.7
420≤x<640		Ø15.9
640≤x<920	Ø34.9	Ø19.1
≥920	Ø41.3	

E. Piping between refrigerant branch kit and indoor unit
- Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit.

Indoor capacity type	Piping size (outer diameter) (mm) Gas pipe	Liquid pipe
20~50	Ø12.7	Ø6.4
63~125	Ø15.9	Ø9.5
200	Ø19.1	
250	Ø22.2	

When the equivalent pipe length between outdoor and indoor units is 90 m or more, the size of the main pipes (both gas side and liquid side) must be increased.
Depending on the length of the piping, the capacity may drop, but even in such a case it is possible to increase the size of the main pipes.

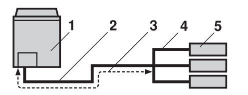
	Gas side
RXYQ5	Ø15.9 → Ø19.1
RX(Y/H)Q8	Ø19.1 → Ø22.2
RX(Y/H)Q10	Ø22.2 → Ø25.4[(a)]
RX(Y/H)Q12~14 + RXYHQ12	Ø28.6 —
RX(Y/H)Q16~22 + RXYHQ16~22	Ø28.6 → Ø31.8[(a)]
RX(Y/H)Q24 + RXYHQ24	Ø34.9 —
RX(Y/H)Q26~34 + RXYHQ26~34	Ø34.9 → Ø38.1[(a)]
RX(Y/H)Q36~54 + RXYHQ36	Ø41.3 —

— Increase is not allowed

(a) If not available, increase is not allowed

	Liquid side
RXYQ5	Ø9.5 —
RX(Y/H)Q8~10	Ø9.5 → Ø12.7
RX(Y/H)Q12~16 + RXYHQ12+16	Ø12.7 → Ø15.9
RX(Y/H)Q18~24 + RXYHQ18~24	Ø15.9 → Ø19.1
RXYQ26~54 + RXYHQ26~36	Ø19.1 → Ø22.2

— Increase is not allowed



1 Outdoor unit
2 Main pipes
3 Increase
4 First refrigerant branch kit
5 Indoor unit

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
R should be rounded off in units of 0.1 kg

⚠ The refrigerant charge of the system must be less than 100 kg. This means that in case the calculated refrigerant charge is equal to or more than 100 kg you must divide your multiple outdoor system into smaller independent systems, each containing less than 100 kg refrigerant charge.
For factory charge, refer to the unit name plate.

R = [(X1 x **Ø22.2**) x0.37] + [(X2 x **Ø19.1**) x0.26] + [(X3 x **Ø15.9**) x0.18] + [(X4 x **Ø12.7**) x0.12] + [(X5 x **Ø9.5**) x0.059] + [(X6 x **Ø6.4**) x0.022] **+ A**

$X_{1...6}$ = Total length (m) of liquid piping size at **Øa**
A = Weight according to table

		A
1x	5~12	0 kg
	14~18	1 kg
2x	2x (8~12)	0 kg
	(8~12) + (14~18)	1 kg
	(14~18) + (14~18)	2 kg
3x	3x (8~12)	0 kg
	[2x (8~12)] + (14~18)	1 kg
	(8~12) + [2x (14~18)]	2 kg
	3x (14~18)	3 kg

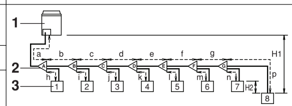
Example for refrigerant branch using refnet joint and refnet header for RXYQ34P ((1x 16) + (1x 18))
If the outdoor unit is RXYQ34P and the piping lengths are as below

a : Ø19.1x30 m	d : Ø9.5x10 m	g : Ø6.4x10 m	j : Ø6.4x10 m
b : Ø15.9x10 m	e : Ø9.5x10 m	h : Ø6.4x20 m	k : Ø6.4x9 m
c : Ø9.5x10 m	f : Ø9.5x10 m	i : Ø12.7x10 m	

R = [30x0.26]+[10x0.18]+[10x0.12]+[40x0.059]+[49x0.022]**+2** = 16.238
⇒ **R = 16.2 kg**

Note 1

Allowable length after the first refrigerant branch kit to indoor units is 40 m or less, however it can be extended up to 90 m if all the following conditions are fulfilled.

Required conditions	Example drawings	
It is necessary to increase the pipe size of the liquid and the gas pipe if the pipe length between the first and the final branch kit is over 40 m (reducers must be procured on site). If the increased pipe size is larger than the pipe size of the main pipe, then the pipe size of the main pipe needs to be increased as well.	indoor unit **8**: b+c+d+e+f+g+p≤90 m increase the pipe size of b, c, d, e, f, g	Increase the pipe size as follows Ø9.5 → Ø12.7 Ø15.9 → Ø19.1 Ø22.2 → Ø25.4* Ø12.7 → Ø15.9 Ø19.1 → Ø22.2 Ø28.6 → Ø31.8* Ø34.9 → Ø38.1* * If available on the site. Otherwise it can not be increased.
For calculation of total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that not increase the pipe size)	a+b*2+c*2+d*2+e*2+f*2+g*2 +h+i+j+k+l+m+n+p≤1000 m	 1 Outdoor unit 2 Refnet joints (a~g) 3 Indoor units (1~8)
Indoor unit to the nearest branch kit ≤40 m	h, i, j....... p≤40 m	
The difference between the distance of the outdoor unit to the farthest indoor unit and the distance of the outdoor unit to the nearest indoor unit ≤40 m	The farthest indoor unit **8** The nearest indoor unit **1** (a+b+c+d+e+f+g+p)–(a+h)≤40 m	

Note 2

If the pipe size above the refnet header is Ø34.9 or more, KHRQ22M75H is required.

4PW67902-1(2)

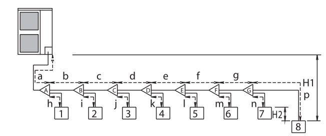
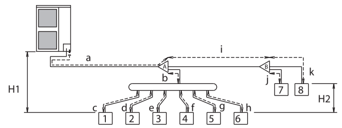
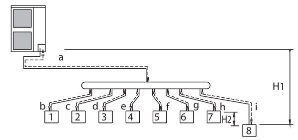
7 Refrigerant pipe selection

7 - 5 VRV®III-S

RXYSQ-P8Y1

Example of connection
(Connection of 8 indoor units Heat pump system)

- 1 indoor unit
- A refnet joint
- refnet header

Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
		

			Branch with refnet joint	Branch with refnet joint and refnet header	Branch with refnet header
Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor and indoor units ≤150 m		
			[Example] unit 8: a+b+c+d+e+f+g+p ≤150 m	[Example] unit 6: a+b+h ≤ 150m, unit 8: a+i+k ≤150 m	[Example] unit 8: a+i ≤150 m
		Equivalent length	Equivalent pipe length between outdoor and indoor units ≤175 m (Assume equivalent pipe length of refnet joint to be 0.5 m and of the refnet header to be 1.0 m. (for calculation purposes))		
		Total extension length	Total piping length from outdoor unit to all indoor units between 10 m and 300 m		
Allowable height	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1) ≤50 m (≤40 m if outdoor unit is located in a lower position).		
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2) ≤15 m		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either refnet joint or refnet header) to indoor unit ≤40 m		
			[Example] unit 8: b+c+d+e+f+g+p ≤40 m	[Example] unit 6: b+h40 m, unit 8: i+k ≤40 m	[Example] unit 8: i ≤40 m

Refrigerant branch kit selection

Refrigerant branch kits can only be used with R410A.

Use the following refnet joint

Outdoor unit capacity type	Refrigerant branch kit name
RXYSQ4~6	KHRQ22M20T

Use the following refnet header

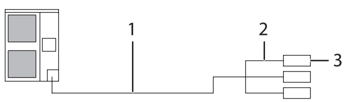
Outdoor unit capacity type	Refrigerant branch kit name
RXYSQ4~6	KHRQ22M29H

Pipe size selection

Caution on selecting connection pipes

If the overall equivalent piping length is ≥90 m, be sure to enlarge the pipe diameter of the gas-side main piping. If the recommended pipe size is not available, stick to the original pipe diameter (which may result in a small capacity decrease).

[Gas side]
RXYSQ4+5: → Ø15.9 Ø19.1
RXYSQ6: → Ø19.1 Ø22.2



1 Main pipe (enlarge)
2 First refrigerant branch kit
3 Indoor unit

A. Piping between outdoor unit and refrigerant branch kit
- Match to the size of the connection piping on the outdoor unit.

Outdoor unit connection piping size

Outdoor unit capacity type	Piping size (outer diameter x minimum thickness) Gas pipe	Liquid pipe
RXYSQ4+5	Ø15.9x1.0 (Ø19.1x1.0)	Ø9.5x0.8
RXYSQ6	Ø19.1x1.0 (Ø22.2x1.0)	

B. Piping between refrigerant branch kits
- Use the pipe size from the following table.

Piping size (outer diameter x minimum thickness) Gas pipe	Liquid pipe
Ø15.9x1.0	Ø9.5x0.8

C. Piping between refrigerant branch kit and indoor unit
- Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit.

Indoor capacity index	Piping size (outer diameter x minimum thickness) Gas pipe	Liquid pipe
20+25+32+40+50	Ø12.7x08	Ø6.4x0.8
63+80+100+125	Ø15.9x1.0	Ø9.5x0.8

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
R should be rounded o in units of 0.1 kg

R= (Total length (m) of liquid piping size at Ø9.5) x0.054+ (Total length (m) of liquid piping size at Ø6.4) x0.022

Example for refrigerant branch using refnet joint and refnet header

a: Ø9.5x3 m	d: Ø9.5x13 m	g: Ø6.4x10 m	j: Ø6.4x10 m
b: Ø9.5x10 m	e: Ø6.4x10 m	h: Ø6.4x20 m	k: Ø6.4x9 m
c: Ø9.5x10 m	f: Ø6.4x10 m	i: Ø9.5x10 m	

R=[73 x 0.054] + [69 x 0.022] = 5.46 ⇒ 5.5 kg

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2
7

7 Refrigerant pipe selection

7 - 5 VRV®III-S

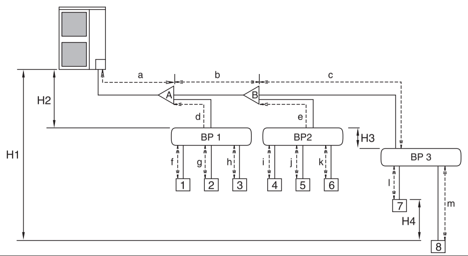
RXYSQ-P8Y1

Example of connection
(Connection of 8 units heat pump system)

- 1 indoor unit
- A refrigerant branch kit (refnet joint)
- BP 1 BP unit

NOTE The refrigerant branch kits must be positioned as close to the BP units as possible (c, d, e must be as short as possible).

Branch with refnet joint



Maximum allowable length	Between outdoor and BP units	Total pipe length	Pipe length between outdoor and BP units ≤55 m [Example] 3 BP units: a+b+c+d+e≤55 m
	Between BP and indoor units	Total pipe length	Piping length between BP and indoor units: RXYSQ4≤60 m, RXYSQ5≤80 m, RXYSQ6≤90 m [Example] RXYSQ5: f+g+h+i+j+k+l+m≤80 m
	Between BP and an indoor unit	1 room length	Pipe length between BP and an indoor unit: ≤15 m [Example] f, g, h, i, j, k, l, m≤15 m
Minimum allowable length(*)	Between outdoor unit and the first refrigerant branch kit	Pipe length	Pipe length between outdoor unit and first refrigerant branch kit: ≥5 m [Example] a≥5 m
Allowable height	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1)≤30 m
	Between outdoor and BP units	Difference in height	Difference in height between outdoor and BP units (H2)≤30 m
	Between BP and BP units	Difference in height	Difference in height between BP and BP units (H3)≤15 m
	Between indoor and indoor units	Difference in height	Difference in height between indoor and indoor units (H4)≤15 m
Allowable length after the branch		Pipe length	Pipe length from first refrigerant branch kit (refnet joint) to indoor unit ≤40 m [Example] unit 8: b+c+m≤40 m [Example] unit 6: b+e+k≤40 m [Example] unit 3: d+h≤40 m
Refrigerant branch kit selection Refrigerant branch kits can only be used with R410A.			Use the following refnet joint: KHRQ22M20T.

(*) The refrigerant sound from the outdoor unit can be transmitted.

Pipe size selection

	Symbol		Piping size (outer diameter x minimum thickness) Gas pipe	Liquid pipe
Between outdoor and first refrigerant branch kit	a		Ø19.1x1.0	Ø9.5x0.8
Between refrigerant branch kit and refrigerant branch kit	b		Ø15.9x1.0	
Between refrigerant branch kit and BP unit	c, d, e	**Total indoor capacity Q**	**Gas pipe**	**Liquid pipe**
		Qc, Qd, Qe ≤5.0 kW	Ø12.7x0.8	Ø6.4x0.8
		Qc, Qd, Qe >5.0 kW	Ø15.9x1.0	Ø9.5x0.8

NOTE
- Qc, Qd, Qe is total connected indoor capacity.
- c, d, e indicates the symbols in the figure.

Example

Indoor 4: 2.5 kW
Indoor 5: 3.5 kW
Indoor 6: 5.0 kW
} Qe=11.0 kW

➡ (Gas pipe) Ø15.9x1.0 and (liquid pipe) Ø9.5x0.8

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
R should be rounded off in units of 0.1 kg

R= (Total length (m) of liquid piping size at Ø9.5) x0.054+ (Total length (m) of liquid piping size at Ø6.4) x0.022

Example for refrigerant branch using refnet joint

a: Ø9.5x10 m	d: Ø9.5x10 m	g: Ø6.4x10 m	j: Ø6.4x10 m	m: Ø6.4x8 m
b: Ø9.5x10 m	e: Ø9.5x10 m	h: Ø6.4x10 m	k: Ø6.4x5 m	
c: Ø6.4x10 m	f: Ø6.4x10 m	i: Ø6.4x10 m	l: Ø6.4x5 m	

R=[40 x 0.054] + [78 x 0.022] = 3.876 ⇒ 3.9 kg

4PW66305-1

7 Refrigerant pipe selection

7 - 6 Piping thickness

Piping diameter	Material	Minimum thickness [mm]
Ø 6.4	O	0.8
Ø 9.5	O	0.8
Ø 12.7	O	0.8
Ø 15.9	O	0.99
Ø 19.1	1/2H	0.8
Ø 22.2	1/2H	0.8
Ø 25.4	1/2H	0.88
Ø 28.6	1/2H	0.99
Ø 31.8	1/2H	1.10
Ø 34.9	1/2H	1.21
Ø 38.1	1/2H	1.32
Ø 41.3	1/2H	1.43

O annealed

1/2H half-hard

For half hard pipes the maximum allowed tensile stress is 61 N/mm^2. For this reason the 0.2% proof strength of the half hard pipe shall be minimum 61 N/mm^2.

The bending radius is more than or equal to 3 times the diameter of the pipe.

In all of us, a green heart

Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.

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